

Exhibit 4

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA,
EASTERN DIVISION

RODNEY D. PIERCE
and MOSES MATTHEWS
Plaintiffs

vs.

Case No 4:23-CV-00193-D

THE NORTH CAROLINA
STATE BOARD OF ELECTIONS, et al.
Defendants

Deposition of:

LOREN COLLINGWOOD, Ph.D.

Appearing Remotely via Zoom from:
Albuquerque, New Mexico

Taken on:

September 24 2024

11:00 a.m. EST/9:00 a.m. GMT

Stenographic Reporter:

Kelliann D. Linberg, RPR, Notary Public
Appearing Remotely from Geauga County, Ohio

<p style="text-align: right;">Page 2</p> <p>1 (All Remote) APPEARANCES: 2 On behalf of the Plaintiffs: 3 Arnold & Porter Kaye Scholer LLP by: 4 ELISABETH THEODORE, ESQ. 5 601 Massachusetts Ave NW 6 Washington, DC, 20001 7 Elisabeth.theodore@arnoldporter.com. 8 Poyner Spruill, LLP 9 CAROLINE MACKIE, ESQ. 10 301 Fayetteville Street 11 Suite 1900 12 Raleigh, NC, 27601 13 Cmackie@poynerspruill.com 14 919-978-3110 15 On behalf of the Defendants: 16 Baker & Hostetler LLP by: 17 KATHERINE L. MCKNIGHT, ESQ. 18 DARIN J. GIBBONS, ESQ. 19 1050 Connecticut Avenue, NW 20 Suite 1100 21 Washington, D.C. 20036 22 1.202.861.1500 23 Kmcknight@bakerlaw.com. 24 25 ERIKA D. PROUTY, ESQ. 26 200 Civic Center Dr 27 Ste 1200 28 Columbus, OH, 43215</p>	<p style="text-align: right;">Page 4</p> <p>1 INDEX OF EXHIBITS 2 DEFENDANTS DESCRIPTION PAGE 3 Exhibit 1 Dr. Collingwood's 5-31-2024 11 4 Expert Report 5 6 Exhibit 2 Copy of Dr. Collingwood's 25 7 C.V. 8 Exhibit 3 Copy of Article By Drs. 102 9 Grofman, Handley and Lublin 10 Titled, Drawing Effective 11 Miority Districts: A 12 Conceptual Framework and Some 13 Empirical Evidence 14 15 Exhibit 4 Copy of Article Titled, 104 16 Providing Black Voters with an 17 Opportunity to Elect 18 Candidates of Choice to the 19 North Carolina State 20 Legislature: A 21 Jurisdiction-Specific, 22 Functional Analysis of Select 23 House and Senate County 24 Grouping, By Lisa Handley, 25 9/17/2019 26 27 Exhibit 5 Copy of Article Titled, Can 105 28 States Promote Minority 29 Representation? Assessing the 30 Effects of the California 31 Voting Rights Act, By Drs. 32 Collingwood and Long 33 Exhibit 6 Copy of Expert Rebuttal 108 34 Report of Dr. Loren 35 Collingwood, 8-30-2024 36 Exhibit 7 Copy of 2-23-2024 Expert 136 37 Report of Dr. Collingwood 38 39 Exhibit 8 Copy of Paper Titled, 138 40 Comparing Methods for 41 Estimating Demographics in 42 Racially Polarized Voting 43 Analyses, 4/21/2022 44 45</p>
<p style="text-align: right;">Page 3</p> <p>1 TRANSCRIPT INDEX 2 3 APPEARANCES.....2 4 INDEX OF EXHIBITS.....4 5 6 7 EXAMINATION OF LOREN COLLINGWOOD, Ph.D.: 8 BY MS. McKNIGHT.....6 9 10 11 REPORTER'S CERTIFICATE.....141 12 13 14 EXHIBIT CUSTODY: RETAINED BY COURT REPORTER 15 16 17 18 19 20 21 22 23 24 25</p>	<p style="text-align: right;">Page 5</p> <p>1 - - - - - 2 COURT REPORTER: Due to the need for this 3 deposition to take place remotely, do you stipulate 4 that I may swear in the witness over the 5 videoconference and waive any objections to this manner 6 of reporting? 7 MS. McKNIGHT: We do on behalf of 8 Defendants. 9 MS. THEODORE: We do as well, the 10 Plaintiff's, sure. 11 LOREN COLLINGWOOD, Ph.D., of lawful age, 12 called for examination, as provided by the Ohio Rules 13 of Civil Procedure, being by me first duly sworn, as 14 hereinafter certified, deposed and said as follows: 15 - - - - - 16 MS. McKNIGHT: Thank you. One note to put 17 on the record is that we have an attorney sitting in on 18 this deposition named, Darin Gibbons, from the law 19 firm, Baker Hofstetter. He has not yet had an 20 opportunity to enter his appearance in this matter. We 21 understand that Plaintiffs have no objection to his 22 participation in this deposition in this role. Could I 23 confirm on the record that that's correct? 24 MS. THEODORE: That's correct. 25 MS. McKNIGHT: Okay. Thank you.</p>

<p style="text-align: right;">Page 6</p> <p>1 EXAMINATION OF LOREN COLLINGWOOD, Ph.D.</p> <p>2 BY MS. McKNIGHT:</p> <p>3 Q. Okay, good morning, Dr. Collingwood. I'm</p> <p>4 Kate McKnight with Baker Hostetler, and I am here today</p> <p>5 on behalf of the Defendants in the Pierce v North</p> <p>6 Carolina State Board of Elections case in Federal Court</p> <p>7 in the Eastern District of North Carolina.</p> <p>8 Would you state your name for the record?</p> <p>9 A. Loren Collingwood.</p> <p>10 Q. And I understand that you have been deposed</p> <p>11 before; is that right?</p> <p>12 A. Correct.</p> <p>13 Q. Okay. So, I'll keep these brief, but I do</p> <p>14 need to make these points. First, I'll endeavor to</p> <p>15 take a break every hour or so. This is not an</p> <p>16 endurance contest.</p> <p>17 If you need a break between those hour</p> <p>18 breaks, please let me know. I only ask that you answer</p> <p>19 any pending question before we take a break. Is that</p> <p>20 fair?</p> <p>21 A. Yes.</p> <p>22 Q. Second, if any of my questions are not</p> <p>23 clear, I don't use a right term -- you are the expert,</p> <p>24 I am not -- please let me know so we can have a clear</p> <p>25 record for the court. Is that fair?</p>	<p style="text-align: right;">Page 8</p> <p>1 Q. And do you have anything up on the screen</p> <p>2 other than this video deposition?</p> <p>3 A. I do not.</p> <p>4 Q. If you'd like, we can take a moment and</p> <p>5 scroll through the report. I understood you just said</p> <p>6 it was a true copy. I want to make sure it is a</p> <p>7 complete copy. Can you take whatever time you need to</p> <p>8 make sure that it is complete?</p> <p>9 A. (Indicating). Looks good. Looks right.</p> <p>10 MS. THEODORE: Sorry to interrupt. Are you</p> <p>11 going to be sharing these exhibits over the chat or</p> <p>12 something so we will have a copy as opposed to looking</p> <p>13 on the screen?</p> <p>14 MS. McKNIGHT: So, we learned just before</p> <p>15 the deposition that there is not a sharing via chat</p> <p>16 feature with Veritext, so I think what we can do is --</p> <p>17 first, I think we can transfer control of the share</p> <p>18 document to Dr. Collingwood so that he can control</p> <p>19 flipping through it. Is that correct, Ms. Linberg, or,</p> <p>20 Ms. Prouty? Can we transfer control to</p> <p>21 Dr. Collingwood?</p> <p>22 MS. THEODORE: I guess the other option</p> <p>23 would be, certainly, with, like, the report, we can ask</p> <p>24 Dr. Collingwood to just call up a copy on his screen so</p> <p>25 that he can -- you know, on his own computer, so that</p>
<p style="text-align: right;">Page 7</p> <p>1 A. Correct.</p> <p>2 Q. Finally, if you have -- not finally, there</p> <p>3 is always one more with a lawyer -- please answer</p> <p>4 clearly with a verbal answer. The court reporter</p> <p>5 cannot record head nods. Do you understand that?</p> <p>6 A. Yes.</p> <p>7 Q. And, finally, let's try to not talk over</p> <p>8 one another. Is that fair?</p> <p>9 A. I will do my best.</p> <p>10 Q. Okay. Great. Let's get started.</p> <p>11 Let's put up as an exhibit -- I think the</p> <p>12 way we need to do this is we need to share screen and</p> <p>13 my colleague, Ms. Prouty, will be sharing her screen</p> <p>14 with you. In exhibit -- and I'd like to ask you to</p> <p>15 take a look and let me know if you recognize it.</p> <p>16 A. (Indicating). I do recognize that.</p> <p>17 Q. And what is it?</p> <p>18 A. It appears to be a correct and true copy of</p> <p>19 my first report.</p> <p>20 Q. And by any chance do you have a copy of</p> <p>21 your paper report with you now?</p> <p>22 A. No, I don't actually.</p> <p>23 Q. Okay. Do you have any papers or notes with</p> <p>24 you now?</p> <p>25 A. I do not.</p>	<p style="text-align: right;">Page 9</p> <p>1 he would be able to look through it.</p> <p>2 MS. McKNIGHT: Yes, thanks, Elisabeth.</p> <p>3 BY MS. McKNIGHT:</p> <p>4 Q. So, Dr. Collingwood, what would you prefer,</p> <p>5 either sort of sharing control via share screen -- I</p> <p>6 think you should probably test it out before you say</p> <p>7 it's okay -- or pulling up a copy on your screen?</p> <p>8 A. Probably a copy on my screen. I'm sorry. I</p> <p>9 had some printing issues on my end.</p> <p>10 Q. That's okay.</p> <p>11 A. So, that's probably preferred for me</p> <p>12 because, often, I have experienced a delay in -- when</p> <p>13 the share screen goes and -- so, it would be, just,</p> <p>14 easier. Are you able to share these documents with me,</p> <p>15 or my attorney, and then I can get them via some other</p> <p>16 form, or either drop in the chat or something?</p> <p>17 Q. Right. So, we can't --</p> <p>18 A. I guess you can't do that. Or email?</p> <p>19 Q. Sure. What's the best email address for</p> <p>20 you? Let's get that set now so we can do it</p> <p>21 throughout.</p> <p>22 (Reporter asked for clarification)</p> <p>23 MS. McKNIGHT: Oh, pardon me. No, we don't</p> <p>24 need to stay on the record for this piece.</p> <p>25 - - - - -</p> <p>(Discussion off the record.)</p>

<p style="text-align: right;">Page 10</p> <p>1 - - - - -</p> <p>2 BY MS. McKNIGHT:</p> <p>3 Q. Okay. Dr. Collingwood, I am not sure that</p> <p>4 I got an answer to my question, so pardon me if this is</p> <p>5 repeating. Is this a complete copy of your report</p> <p>6 submitted in this matter on May 31, 2024?</p> <p>7 A. Yes.</p> <p>8 Q. Let's mark this as Exhibit 1, Ms. Linberg.</p> <p>9 (Exhibit 1 was marked for</p> <p>10 identification.)</p> <p>11 Q. Dr. Collingwood, do you have any amendments</p> <p>12 to this work that you have already prepared?</p> <p>13 A. No.</p> <p>14 Q. And do you have any plans to amend this</p> <p>15 report in the future?</p> <p>16 A. Not at the moment, no.</p> <p>17 Q. Does this report contain all of the</p> <p>18 opinions you intend to offer in this case?</p> <p>19 A. No.</p> <p>20 Q. Okay. And what other -- what opinions do</p> <p>21 you intend to offer in this case that are not included</p> <p>22 in that report?</p> <p>23 A. Well, I did -- did an analysis and a</p> <p>24 rebuttal report, and I think there is quite a good</p> <p>25 chance that I will do another supplemental report.</p>	<p style="text-align: right;">Page 12</p> <p>1 withheld them?</p> <p>2 MS. THEODORE: Objection to form.</p> <p>3 A. Well, my understanding is that the reports</p> <p>4 were submitted.</p> <p>5 Q. You mentioned earlier, there may be other</p> <p>6 issues related to race and voting. What kinds of</p> <p>7 issues were you referring to there?</p> <p>8 A. You know, I can't really say exactly what</p> <p>9 issues. Could be certain issues come relevant in the</p> <p>10 case that are within the jurisdiction of my expertise</p> <p>11 that could require a response from me. It could be --</p> <p>12 I am trying to think of some other -- in some cases, I</p> <p>13 look at -- I do a deeper dive into voter turnout, a</p> <p>14 deeper dive into socioeconomics. Those are areas that</p> <p>15 I have done -- presented evidence on and testified to</p> <p>16 in other cases, so sometimes that becomes relevant.</p> <p>17 Q. Okay. And this deeper dive into voter</p> <p>18 turnout on socioeconomics, you did not do that in this</p> <p>19 case yet; is that right?</p> <p>20 MS. THEODORE: Objection to form.</p> <p>21 A. That's not exactly true. I did do some of</p> <p>22 that in this particular report here. The dynamics</p> <p>23 might change, and so it just -- it is hard to know</p> <p>24 exactly what, you know -- how a report is going to play</p> <p>25 out in advance until you get data and start thinking</p>
<p style="text-align: right;">Page 11</p> <p>1 And, so, depending on data or circumstances in the</p> <p>2 case, my opinions could change or be updated.</p> <p>3 Q. Okay. And as you sit here today, what kind</p> <p>4 of supplemental report would you anticipate providing?</p> <p>5 A. Likely, a report in response to new</p> <p>6 election data and, potentially, other -- other issues</p> <p>7 related to race and voting that may come up in the</p> <p>8 context of the case.</p> <p>9 Q. When you say election data, are you</p> <p>10 referring to the upcoming election in November 2024?</p> <p>11 A. Correct.</p> <p>12 Q. Now, you have provided an expert opinion in</p> <p>13 other lawsuits; is that correct?</p> <p>14 A. That's correct.</p> <p>15 Q. Has your opinion ever been submitted in any</p> <p>16 of those lawsuits when it was not favorable to the</p> <p>17 party that hired you to offer the opinion?</p> <p>18 MS. THEODORE: Objection to form.</p> <p>19 A. I mean, I've submitted reports that are</p> <p>20 potentially not the clean results that a client who</p> <p>21 hired me necessarily would have wanted, if that makes</p> <p>22 sense.</p> <p>23 Q. Sure. So, you have submitted those to</p> <p>24 attorneys, and do you recall if the attorneys then</p> <p>25 submitted them in those lawsuits or whether they</p>	<p style="text-align: right;">Page 13</p> <p>1 about it, and have the time to review all the relevant</p> <p>2 information.</p> <p>3 Q. I see. And, so, this -- meaning this</p> <p>4 deeper dive. You are suggesting a deeper dive may</p> <p>5 happen at a later point, one that has not occurred yet;</p> <p>6 is that fair?</p> <p>7 MS. THEODORE: Objection to form.</p> <p>8 A. Well, I mean, a deeper dive in the sense</p> <p>9 that it could be something that I focus very deeply or</p> <p>10 specifically on. It could be, you know, a county, a</p> <p>11 precinct that's, you know, unique, that needs to be</p> <p>12 expounded upon. Perhaps data in one county, or one</p> <p>13 precinct, changes between elections. That occasionally</p> <p>14 happens, and there needs to be a reasonable, plausible</p> <p>15 explanation for that.</p> <p>16 So, while I haven't done that specific</p> <p>17 thing in this report, sometimes that becomes useful in</p> <p>18 future supplemental reports, to do something like that.</p> <p>19 Q. I see. Earlier you said that sometimes</p> <p>20 dynamics change and that would cause you to prepare a</p> <p>21 supplemental report. What kinds of dynamics were you</p> <p>22 considering when you said that?</p> <p>23 MS. THEODORE: Objection to form.</p> <p>24 A. That was -- I wasn't really considering any</p> <p>25 specific dynamic, just, you know, election or dynamic</p>

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<p style="text-align: right;">Page 14</p> <p>1 events, you know, in general. There could be a 2 population change within a short time period; 3 typically, not. There could be candidate differences, 4 unique candidates that are different than other 5 candidates, those types of things. But it's not 6 anything specific I have in mind right at the moment. 7 Q. Okay. And when you mention population 8 change, what kind of population change would you expect 9 to happen between now and a trial that would occur in, 10 roughly, February 2025? 11 A. Yeah, in that case, it would be unlikely 12 that we would see large population changes outside of 13 some huge hurricane or something, which, of course, in 14 North Carolina, is possible. But that would be 15 unlikely, and it would be also unlikely to be able to 16 see census, or American Community Survey population 17 change during that time period, probably wouldn't be 18 able to get a good read on it. 19 But there might be a situation where voter 20 turnout drastically drops or increases. And, so, that 21 -- you might need a plausible explanation for what that 22 has -- why that has happened. And you would, 23 therefore, potentially need to address the way you do 24 your statistical analysis. 25 Q. What are some ways you would adjust the way</p>	<p style="text-align: right;">Page 16</p> <p>1 dated May 31, 2024, contained all of the opinions you 2 intend to offer in this case and you said, no, that you 3 also have a rebuttal report, number one, and number 4 two, you suggested you may have a supplemental report 5 at some time in the future. Did I summarize your 6 response accurately? 7 MS. THEODORE: Objection to form. 8 A. In terms of the actual documents, yes, 9 those are the likely three documents that I will 10 produce. 11 Q. Are there any opinions, other than those 12 that would be expressed in those three documents, as 13 you described them, that you intend to offer in this 14 case? 15 A. In terms of a written document, that's my 16 expectation, would be these three documents. But, 17 obviously, in the context of trial testimony on cross 18 or if the judge instructs me to give my opinion on 19 something, I will do that. 20 Q. What documents and information did you rely 21 on to prepare your reports in this case? 22 A. I relied on election data from the North 23 Carolina State Board of Elections at the precinct 24 level, and that also incorporates vote history returns 25 of those same elections. And, that includes how many</p>
<p style="text-align: right;">Page 15</p> <p>1 you do your statistical analysis to account for that 2 kind of change? 3 A. Well, one thing that could happen, if there 4 is a change that eventually affects a racial group 5 differently than another racial group, you may no 6 longer have as many homogeneous or heterogeneous, 7 racially heterogeneous or racially homogeneous 8 precincts. And, so, that could have an effect on 9 results, potentially, which would require -- try to see 10 if that is true and whether that affects your 11 statistical estimate. 12 So, a lot of it requires really digging 13 deep into the data. That's why I use the term, deep 14 dive, to see if these kinds of things are there. 15 Q. And is it your view that you conducted a 16 homogeneous precinct analysis in this case? 17 A. I did not conduct a specific homogeneous 18 precinct analysis that people may do in these types of 19 cases, but I certainly look at the data. That's 20 probably the first thing that I do to ensure, you know, 21 the racial distribution of black versus white 22 individuals in different jurisdictions, in this area, 23 as characterized by very good data in order to conduct 24 ecological imprints. 25 Q. So, I had asked if this report, the report</p>	<p style="text-align: right;">Page 17</p> <p>1 black versus white, versus other individuals voted in a 2 particular election. 3 I also relied on different shapefiles and 4 geographic information systems, GIS, files, precinct 5 shapefiles, as well as election district shapefiles 6 that's available on the NCSBE website. I relied on 7 similar shapefiles and geographic information from 8 Plaintiff's attorney, and also relied on population 9 data at the Census 2020 population data at the block 10 level, county level. 11 In terms of this report, I believe that -- 12 that is what I relied on. 13 Q. Thank you. I'm jumping ahead a bit, but 14 just so I don't forget to ask the question. You 15 mentioned you submitted a rebuttal report in this 16 matter. Do you recall that? 17 A. I do. 18 Q. And what information or documents did you 19 rely on to prepare that rebuttal report? 20 A. Similar set of data, but I also relied on 21 the replication and production files from defendant 22 experts as well. In addition, there was, I think, an 23 additional demonstration plan, shapefile, and -- as 24 well as some block group information that was provided 25 to me about various alternative plans.</p>

<p style="text-align: right;">Page 18</p> <p>1 Q. Did you rely on any other documents or 2 information to prepare your rebuttal report? 3 A. I would need to pull up the rebuttal report 4 to look at the section in terms of what I'm relying on, 5 but in terms of my memory, that is the primary set of 6 information I was relying on. 7 Q. Okay. So, we can return to this when we 8 look at your rebuttal report. For now, I'd like to -- 9 yeah, I'd like to move on for now. 10 So, moving to your preparation for today's 11 deposition, what did you do to prepare? 12 A. I had, I believe, three meetings with 13 counsel and I read my reports, reviewed some of the 14 reports from -- expert defense experts. That's what I 15 did. 16 Q. I'm not going to ask you questions about 17 the contents of your meeting with counsel, but I would 18 like to know, roughly, when you had those meetings with 19 counsel. 20 A. Late last week, and Sunday, and yesterday, 21 Monday. 22 Q. Did you talk with anyone else in 23 preparation for your deposition in this case? 24 MS. THEODORE: Objection to form. 25 A. No, I did not.</p>	<p style="text-align: right;">Page 20</p> <p>1 a lot of it resolves around Latino politics and Latino 2 public opinion. 3 Q. And about how long have you been a 4 co-author with him on different articles? 5 A. Probably 14 years, 15 years. 6 Q. How did you come to know him? 7 A. He was a professor at University of 8 Washington where I got my Ph.D. 9 Q. Pardon me, I only have a J.D. not a Ph.D. 10 Is there some formula with Ph.D.'s where you have a 11 panel of professors who give you feedback on 12 dissertation? 13 A. Yes, that's more or less correct, yeah. 14 Q. And is it called a panel? 15 A. It would be called a committee. 16 Q. Committee. That's right. Did Dr. Barreto 17 serve on your committee? 18 A. He chaired it. 19 Q. Would you consider him something of a 20 mentor? 21 A. He was -- he and my other committee 22 members. I mean, it is -- they do mentor you. A lot 23 of it is, they advise you on how to be an academic, how 24 to be in the profession, what to expect when you get 25 your first academic job, how do you navigate tenure.</p>
<p style="text-align: right;">Page 19</p> <p>1 Q. Have you ever reviewed any court opinions 2 for your work in this case, whether it was to prepare 3 for deposition or to prepare your opinions? 4 A. I have not read a full opinion or -- yeah, 5 I haven't read any; like, downloaded the document of 6 the opinion from the court and examined it. No, I have 7 not. 8 Q. Okay. Have you read any part of a court 9 opinion related to this case? 10 A. Well, I think in one of my rebuttal or 11 initial reports, I have a quote from, I think, the 12 Fourth Circuit that is used in the report, but I don't 13 think that that comes from an opinion from this Court. 14 Q. I see. Do you remember, roughly, when that 15 opinion came out? 16 A. No. 17 Q. And you said that you included that cite in 18 your opening report in this case? 19 A. I would have to review the -- which one it 20 is. I think it is the rebuttal report. 21 Q. Do you know someone named Matt Baretto? 22 A. Yes. 23 Q. How do you know him? 24 A. Matt and I are co-authors on some research. 25 Some of it revolves around racial polarized voting, but</p>	<p style="text-align: right;">Page 21</p> <p>1 Those kinds of things. 2 Q. Are you aware that Dr. Baretto submitted an 3 expert report in an earlier stage of this case? 4 A. Yes. 5 Q. And did you review that report? 6 A. I have not seen that report. 7 Q. Do you know anything about that report? 8 MS. THEODORE: Objection to form. 9 A. I do not know anything about that report. 10 Q. Okay. Do you have any understanding of 11 Dr. Barreto's work in this case when you prepared your 12 report? 13 MS. THEODORE: Objection to form. 14 A. What I know is that there was some issues 15 related to the electoral performance analysis that was 16 conducted. That's pretty much the extent that I know 17 about what he did or did not do in this case. 18 MS. THEODORE: Dr. Collingwood, I am going 19 to instruct you not to answer any question where your 20 response would be based on conversations with counsel. 21 THE WITNESS: Okay. 22 Q. Outside any conversations with counsel, did 23 you consider Dr. Baretto's issues related to electoral 24 performance analysis in doing your work in this case? 25 MS. THEODORE: Objection to form.</p>

<p style="text-align: right;">Page 22</p> <p>1 A. No.</p> <p>2 Q. Other than counsel, did you talk to anyone</p> <p>3 else about Dr. Barreto's work in this case?</p> <p>4 A. I did not.</p> <p>5 Q. Did you ever reach out to Dr. Barreto about</p> <p>6 your work in this case?</p> <p>7 A. Definitely not.</p> <p>8 Q. Did you ever speak with him about your work</p> <p>9 in this case?</p> <p>10 A. Definitely not.</p> <p>11 Q. Did you ever email or otherwise exchange</p> <p>12 written correspondence with Dr. Barreto about your work</p> <p>13 in this case?</p> <p>14 A. No.</p> <p>15 Q. Earlier you said you had reviewed expert</p> <p>16 reports submitted by defendants in this matter. Do you</p> <p>17 recall that answer?</p> <p>18 A. I do.</p> <p>19 Q. Okay. Could you tell me which reports of</p> <p>20 which experts you reviewed, submitted by Defendants in</p> <p>21 this case?</p> <p>22 A. Dr. John Alford and Dr. Sean Trende.</p> <p>23 Q. Any others?</p> <p>24 A. No, that's it.</p> <p>25 Q. And do you recall reviewing any expert</p>	<p style="text-align: right;">Page 24</p> <p>1 you receive it and you are prepared to testify.</p> <p>2 A. Okay. I received it, downloaded it.</p> <p>3 Q. Dr. Collingwood, what is this -- let's mark</p> <p>4 it as Exhibit 2, and I ask you to describe it.</p> <p>5 A. This is my curriculum vitae, C.V., that I</p> <p>6 submitted in this case.</p> <p>7 Q. Okay. Let's turn to the last page.</p> <p>8 A. Okay.</p> <p>9 Q. I see a date of May 1, 2024. Do you see</p> <p>10 that?</p> <p>11 A. Yes.</p> <p>12 Q. Being that it is September 2024, do you</p> <p>13 have any updates to this resume?</p> <p>14 A. There is another -- I think I have another</p> <p>15 forthcoming article and book that's getting ready for</p> <p>16 submission. If it weren't for all these cases, it</p> <p>17 would have already been submitted. Just kidding.</p> <p>18 Well, not really.</p> <p>19 So, yeah, I have an additional article and</p> <p>20 a manuscript under preparation that's now on my C.V.</p> <p>21 Q. Okay. What's the subject matter of that</p> <p>22 article and the book?</p> <p>23 A. Academic Voting. And the book is about</p> <p>24 private prison companies and immigrant detention.</p> <p>25 Q. Was any of your work in that article or</p>
<p style="text-align: right;">Page 23</p> <p>1 reports submitted in any other North Carolina cases by</p> <p>2 expert witnesses?</p> <p>3 MS. THEODORE: Objection to form.</p> <p>4 A. I may have come across an expert report</p> <p>5 from, like, 15 years ago from either Alford or this</p> <p>6 Professor Dick Enburg (ph), I think is his name. But</p> <p>7 it wasn't related to the work I was doing in this case.</p> <p>8 It was just something I may have come across at some</p> <p>9 point, probably, you know, like a year or two ago.</p> <p>10 Q. I know you served as an expert witness in</p> <p>11 other cases. Have you ever served as an expert witness</p> <p>12 in a lawsuit in North Carolina?</p> <p>13 A. I do not think so.</p> <p>14 Q. Okay. Let's move on to our next exhibit.</p> <p>15 And this will be a copy of your C.V., I'll give you a</p> <p>16 spoiler there. Let's pull it up. I hope we can have</p> <p>17 other exhibits in the share file after our first break,</p> <p>18 but for now I think we need to stick with this format.</p> <p>19 A. Okay.</p> <p>20 MS. McKNIGHT: Ms. Prouty, would you email</p> <p>21 that to Dr. Collingwood and Ms. Theodore?</p> <p>22 MS. PROUTY: Yes. I just sent it.</p> <p>23 (Exhibit 2 was marked for</p> <p>24 identification.)</p> <p>25 Q. Dr. Collingwood, please let us know when</p>	<p style="text-align: right;">Page 25</p> <p>1 book that you just described related to North Carolina</p> <p>2 specifically?</p> <p>3 A. I don't think so. I am trying to think if</p> <p>4 there is an immigrant detention facility. There might</p> <p>5 be one in North Carolina, but I can't recall off the</p> <p>6 top of my head.</p> <p>7 But it -- it wouldn't be specifically about</p> <p>8 that facility any way. And there are -- there is data</p> <p>9 on -- or are data on legislators around the country,</p> <p>10 which would include North Carolina, but there is not a</p> <p>11 specific focus on North Carolina in either of the</p> <p>12 articles.</p> <p>13 Q. Can you confirm that this resume is</p> <p>14 accurate and reflects your relevant experience to date</p> <p>15 with the addition of the article and book you just</p> <p>16 described?</p> <p>17 A. Yes, I can confirm.</p> <p>18 Q. Dr. Collingwood, are you a lawyer?</p> <p>19 A. No.</p> <p>20 Q. Do you offer any legal opinions in this</p> <p>21 case?</p> <p>22 A. I do my best not to.</p> <p>23 Q. And why is that?</p> <p>24 A. Sometimes lawyers ask you questions that</p> <p>25 you just answer and you may be accidently dropping into</p>

7 (Pages 22 - 25)

<p style="text-align: right;">Page 26</p> <p>1 a legal opinion without your knowledge. So, I do my 2 best not to do that. 3 Q. And why do you do your best not to offer a 4 legal opinion? 5 A. Because I'm not a lawyer. 6 Q. If I use the term, statistical 7 significance, what does that mean to you? 8 A. That typically means that something is 9 likely to give a possible chance, and so you can 10 increase your confidence that if something is 11 statistically significant, that's an actual true 12 finding. 13 Q. Is it fair to say that you believe your 14 opinion can tell the Court whether something is 15 statistically significant? 16 MS. THEODORE: Objection to form. 17 A. My data and my analysis includes the 18 requisite statistics and various confident intervals 19 that allows one to determine whether an estimate that's 20 produced through statistics is statistically 21 significant or statistically different than another 22 estimate. 23 Q. If I use the term, legal significance, what 24 does that mean to you? 25 MS. THEODORE: Objection to form.</p>	<p style="text-align: right;">Page 28</p> <p>1 Thornburg versus Gingles? 2 A. Yes. 3 Q. What does that mean to you? 4 A. As a general rule, Thornburg versus Gingles 5 sets out a test, as it were, to assess whether the 6 minority voters' votes are being diluted by majority. 7 And, so, that test has three prongs. 8 The first one is whether a majority 9 minority district can be drawn in a particular area 10 under investigation. Second is whether minority voters 11 are cohesive in their support for candidates that they 12 prefer. And, then, the third prong is whether the 13 majority, typically white voters, are blocking minority 14 voters from electing their preferred candidates. 15 Q. Do you have an understanding about whether 16 the Voting Rights Act seeks to guarantee wins for black 17 voters or an opportunity to elect a candidate of 18 choice? 19 MS. THEODORE: Objection to form, and to 20 the extent it is asking for a legal conclusion. 21 A. My understanding is that it does not 22 guarantee wins and it is more about providing minority 23 voters with a good opportunity to elect their candidate 24 of choice. 25 Q. If I use the term, crossover district, do</p>
<p style="text-align: right;">Page 27</p> <p>1 A. Yeah, that I don't know as well, as what 2 legal significance means. 3 Q. And is it fair to say that you are not here 4 to tell the Court what -- when something is legally 5 significant? 6 A. I believe that is true. I am here to 7 conduct statistical analyses on voting and not 8 drawing -- and to provide the Court information that 9 will allow the Court to make the decision that the 10 Court is going to make. 11 Q. Are you familiar with the Voting Rights 12 Act? 13 A. Yes. 14 Q. And I understand you are not a lawyer so 15 these questions are not looking for a legal opinion, 16 but, instead, looking for your understanding as an 17 expert in this case. Are you familiar with the legal 18 requirements imposed on states in drawing voting 19 districts under the Voting Rights Act? 20 MS. THEODORE: Objection to form. 21 A. I am familiar with the broad 22 interpretations of how experts conduct analysis under 23 the Voting Rights Act for, specifically, Section 2 of 24 the Voting Rights Act. 25 Q. Have you ever heard of a case called,</p>	<p style="text-align: right;">Page 29</p> <p>1 you know what that means? 2 A. I think so. You may want to spell it out 3 to me so we are in agreement, but it sounds like -- it 4 is a familiar term that we might use in that area. 5 Q. Okay. What does the term, crossover 6 district, mean to you? 7 A. I would think it would be a district where 8 enough white voters vote with the large majority of, 9 say, black voters such that the black voters' preferred 10 candidate is able to get elected. 11 Q. And, again, I am not looking for a legal 12 conclusion. I am looking for your understanding as an 13 expert in this case. Do you believe that jurisdictions 14 are required to draw crossover districts? 15 MS. THEODORE: Objection to form, and to 16 the extent it is calling for a legal conclusion. 17 A. Not specifically a crossover district. I 18 think if it can be demonstrated that Gingles I through 19 III are met, then jurisdictions and, say, in this case, 20 states are required to generate districts that can be 21 then demonstrated that in this case, black voters have, 22 at least, an ability to elect their preferred 23 candidate. 24 Q. I'd like to ask you about your experience 25 performing racially polarized voting analyses for</p>

<p style="text-align: right;">Page 30</p> <p>1 submission to courts in redistricting litigation. When</p> <p>2 I use the phrase, racially polarizing voting analysis,</p> <p>3 do you know what that is?</p> <p>4 A. I do.</p> <p>5 Q. And have you ever -- I'll refer to it as</p> <p>6 RPV for sake of time. Have you ever submitted an RPV</p> <p>7 analysis to a court for consideration and piece of</p> <p>8 litigation?</p> <p>9 A. Yes, I have.</p> <p>10 Q. Let's turn to Page 16 of your C.V. Does</p> <p>11 this page of your C.V. identify clients for which you</p> <p>12 have been hired to work to provide an RPV analysis to a</p> <p>13 court for consideration?</p> <p>14 A. Yes. Not all of these are RPV analyses,</p> <p>15 but I would say most of them are.</p> <p>16 Q. And just to make sure I am focused on the</p> <p>17 right spot, are there any other clients for whom you</p> <p>18 submitted RPV analysis to court for consideration, but</p> <p>19 they are not listed here on Page 16?</p> <p>20 A. I don't think so. I think they would be</p> <p>21 all listed.</p> <p>22 Q. I notice a number of these clients are in</p> <p>23 California. Is that fair to say?</p> <p>24 A. Certainly a -- let me see. Hold on.</p> <p>25 Q. I can clarify more specifically. I notice</p>	<p style="text-align: right;">Page 32</p> <p>1 entity.</p> <p>2 Q. You named Roswell Independent School</p> <p>3 District in New Mexico. Are there any other</p> <p>4 jurisdiction clients who hired you during the map</p> <p>5 drawing phase, outside of California, to conduct an RPV</p> <p>6 analysis?</p> <p>7 A. I don't think so.</p> <p>8 Q. I'd like to ask you about your expert</p> <p>9 witness work. Have you ever been hired by defendants</p> <p>10 in a redistricting lawsuit?</p> <p>11 A. No.</p> <p>12 Q. Have you ever offered a court the opinion</p> <p>13 that voters made their voting choices based on their</p> <p>14 political preferences, not racial preferences?</p> <p>15 MS. THEODORE: Objection to form.</p> <p>16 A. I don't think so, not in a court context. I</p> <p>17 mean, we might do that analysis in a paper or something</p> <p>18 where we are looking at partisanship, we are not</p> <p>19 looking to raise various things, but not in a legal</p> <p>20 context, no.</p> <p>21 Q. I see. So, have you ever -- have you ever</p> <p>22 written an article where you provide the opinion that</p> <p>23 voters made choices based on partisan preference as</p> <p>24 opposed to race?</p> <p>25 A. I don't think so. There are certainly</p>
<p style="text-align: right;">Page 31</p> <p>1 a number of these jurisdiction clients are not private</p> <p>2 clients, but jurisdictions drawing maps. A number of</p> <p>3 those clients are in California. I wondered if that</p> <p>4 was a correct understanding.</p> <p>5 MS. THEODORE: Objection to form.</p> <p>6 A. I think that's a -- you know, a significant</p> <p>7 amount of work I have done is based out of California.</p> <p>8 Q. Have you ever been hired by a jurisdiction,</p> <p>9 whether it is a locality or a state, in the phase -- in</p> <p>10 the map drawing phase, when they're drawing</p> <p>11 redistricting maps, to provide an RPV analysis?</p> <p>12 A. Yes, I have.</p> <p>13 Q. And are any of those jurisdictional clients</p> <p>14 outside of California?</p> <p>15 A. Yes.</p> <p>16 Q. And what are those?</p> <p>17 A. In the -- by the jurisdiction that was</p> <p>18 drawing -- the map was Roswell Independent School</p> <p>19 District in New Mexico.</p> <p>20 Q. Okay.</p> <p>21 A. And then I -- I have done some map drawing</p> <p>22 outside in other states, but that was for, like,</p> <p>23 various plaintiff -- not plaintiff -- but interested</p> <p>24 parties that were looking at what possible districts</p> <p>25 could look like. But that was not for a government</p>	<p style="text-align: right;">Page 33</p> <p>1 articles I have written that looks at the role of</p> <p>2 partisan identification and stuff like that, but the</p> <p>3 article is not typically framed around this versus</p> <p>4 that. So, I'd have to go through and read all my</p> <p>5 various articles to give you a completely definitive</p> <p>6 answer, which would take a while. But I don't think I</p> <p>7 have provided -- I have done that specific analysis,</p> <p>8 no.</p> <p>9 Q. As you sit here today, you can't think of</p> <p>10 anything; is that fair?</p> <p>11 A. I think that's right. Nothing really pops.</p> <p>12 Q. Aside from writing papers, have you ever</p> <p>13 teased out why voters make their choice on the ballot,</p> <p>14 to compare partisan versus racial choices?</p> <p>15 MS. THEODORE: Objection to form.</p> <p>16 A. In my -- certainly in my academic work, I</p> <p>17 looked at that quite a bit.</p> <p>18 Q. In your academic work, how is that analysis</p> <p>19 done, the analysis to tease out partisanship from</p> <p>20 racial choices?</p> <p>21 A. It is typically a focus on history and</p> <p>22 looking at key moments surrounding the civil rights</p> <p>23 reforms of the 1960s and then tracing voting behavior</p> <p>24 and partisan identification and race, together, moving</p> <p>25 forward on both partisan identity and candidate vote</p>

1 this stuff, examine voting behavior in the south in
2 this specific kind of -- at least the way that I'm
3 thinking, is, there is a deep south, there is a black
4 belt, which are areas that are high density black. And
5 in the areas where it has historically high density
6 black, typically that's where we see the most extreme
7 racially polarized voting today.

8 We see, dating back to V.O. Key's work in
9 the 1940's and 50's, he was a famous professor who
10 studied southern politics, he was, I believe, at
11 Harvard. He demonstrated that white opposition to
12 black voting and black academic gain was the most
13 extreme in these black belt areas. And, so, we
14 continue to see many of those same patterns even today.
15 There are recent books that I've looked at this.

15 There are recent books that I've looked at this.

16 Q. And, so, would you view racially polarized
17 voting in North Carolina as similar to racially
18 polarized voting in Alabama?

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1 then the slow realignment of white voters into the
2 republican party, you know, after that. And, so, they
3 are just so strongly linked, in the country at large,
4 but particularly in the south.

20 A. Well, in any kind of -- especially in a
21 legal context, if you are doing an analysis, you would
22 certainly do a state-by-state analysis. And, so, my,
23 say, priors might be that there are going to be certain
24 similarities in certain areas, particularly in areas
25 where there is, say, high density black, but as a sort

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1 of expert matter, I would have to go in and do an
2 analysis in Alabama and go in and do an analysis in
3 North Carolina to determine if there are differences
4 and where there might be differences.

5 Q. Would your answer be the same if I replaced
6 Alabama with Mississippi?

7 A. Yeah. Yeah, I think so.

8 Q. Have you ever offered a court opinion that
9 racially polarized voting does not exist in a state?

10 A. I don't think so.

11 MS. McKNIGHT: I am at a good break point
12 and we are at a little over an hour. I suggest we take
13 a break now. Is five minutes okay with you?

14 MS. THEODORE: Fine with me.

15 - - - - -
(Off the record).

16 - - - -
17 BY MS. McKNIGHT:

18 Q. Dr. Collingwood, when were you hired to do
19 your work in this case?

20 A. I think it was April 2024, somewhere like
21 that.

22 Q. Do you remember, was it in the first half
23 of the month, second half of the month? Do you have a
24 memory of that?

25 A. It would have been closer. I may have had

<p style="text-align: right;">Page 38</p> <p>1 -- we may have had an initial call in March, late 2 March, and then there was a week or two, and then the 3 ball got in motion, as it were. So, it would have been 4 in, I believe, earlier April. 5 Q. Okay. When did you begin your work in this 6 case? 7 A. I think that's when I would have started 8 doing that, in the first half of April, if memory 9 serves correctly. 10 Q. And without sharing any privileged 11 information, do you have a sense of why you became 12 involved in this case? 13 A. They needed someone to write an expert 14 report on -- and testify, potentially, on matters 15 related to racially polarized voting, and since I had 16 become one of the established people in this area, 17 without sounding arrogant or anything, it just -- it 18 made sense that I would be contacted. 19 Q. Did anyone help you prepare your first 20 report in this matter? 21 A. No. 22 Q. Did anyone, other than lawyers, help you 23 prepare your rebuttal report in this matter? 24 A. No. 25 Q. Now, turning back to your opening report</p>	<p style="text-align: right;">Page 40</p> <p>1 Q. About how many hours did you spend on your 2 rebuttal report? 3 A. I think about half of what I did on my 4 initial report, which is probably in the 50-hour range. 5 Q. Now, going to the substance of these 6 reports, do I understand correctly that you offer an 7 opinion on Gingles II and Gingles III? 8 A. I do offer those opinions, yes. 9 Q. And do you offer any opinion on Gingles I? 10 A. I do. 11 Q. And where do you offer an opinion on 12 Gingles I? 13 A. That is in the rebuttal report. 14 Q. Do you offer any Gingles I opinion in your 15 opening report? 16 A. I believe there might be some reference to 17 it, which is, that it was my understanding that the 18 illustrative maps had met a Gingles I criteria, but if 19 memory serves, I did not do that analysis. It was a 20 reference to just the general understanding of that. 21 Q. Prior to your work in this case, have you 22 ever studied voting patterns in North Carolina? 23 A. I did do some analysis, maybe not 24 specifically on North Carolina, but the 12 -- or, 11 or 25 12 southern states in a book I wrote that included</p>
<p style="text-align: right;">Page 39</p> <p>1 that you submitted in May 2024, about how many hours 2 did you work on that report? 3 A. A little more than 100 hours, I think. 4 Q. And, then, after you submitted your initial 5 report dated May 31, 2024, did you prepare any other 6 report in this matter? 7 A. Well, my rebuttal report. 8 Q. Did you prepare any reports other than your 9 opening report and your rebuttal report in this matter? 10 A. No. 11 Q. Did you do any work on this case between 12 May 31, 2024 and when you began work on your rebuttal 13 report? 14 A. No. 15 Q. And when did you begin work on your 16 rebuttal report? 17 A. I think it was early August, maybe. 18 Whenever the -- or maybe mid August. I think their -- 19 the Defense expert's reports were due sometime in 20 August, and then, basically, I started working on my 21 rebuttal report once those came in. 22 And I think the rebuttal report was turned 23 in, in the very end of August. So, I think the vast 24 majority of the work I did was in the back half of 25 August.</p>	<p style="text-align: right;">Page 41</p> <p>1 North Carolina, and I have been to the -- I believe I 2 went to University of North Carolina archives and 3 examined voting and documents of different governors, 4 and other elected officials, senators, from the 1940s 5 to '70s range. I would have to go back and remember. 6 There was several -- this was a decade ago when I did 7 this work. 8 So, I have certainly spent time in North 9 Carolina and done analysis of specifically different 10 candidates and how they were dealing with, you know, 11 politics in North Carolina during that era. 12 Q. And by that era, you mean between 1940 and 13 1970, roughly? 14 A. Roughly. Roughly. 15 Q. And when you visited the UNC archives and 16 conducted the work you just described, was that for the 17 book regarding the 11 or 12 southern states? 18 A. Yes. 19 Q. And what is that book titled? 20 A. "Campaigning in a Racially Diversifying 21 America: How and When Cross-Racial Mobilization 22 Occurs". I think. 23 Q. Now, I heard you say the era was 1940 to 24 the 1970s. Is it fair to understand that you did not 25 conduct this review in North Carolina for the years</p>

<p style="text-align: right;">Page 42</p> <p>1 1980 to present?</p> <p>2 MS. THEODORE: Objection to form.</p> <p>3 A. I would have to go back and look at</p> <p>4 everything, but the focus of that work was kind of</p> <p>5 around that time period. So, I think that's probably</p> <p>6 right, but I couldn't say definitively.</p> <p>7 Q. Have you ever done any work to study North</p> <p>8 Carolina voting, prior to this case, for voting in the</p> <p>9 past 20 to 30 years?</p> <p>10 A. Oh, yes, I have. I conducted a -- I wrote</p> <p>11 a paper that I used North Carolina election data to do</p> <p>12 racially polarized voting.</p> <p>13 Q. And what was that paper?</p> <p>14 A. Hold on.</p> <p>15 "Comparing BISG to CVAP Estimates in</p> <p>16 Racially Polarized Voting Analyses". Some of that</p> <p>17 paper includes data in North Carolina.</p> <p>18 Q. What did you do to refresh your</p> <p>19 recollection of the title of that article?</p> <p>20 A. I looked in my C.V. that we had pulled up</p> <p>21 earlier.</p> <p>22 Q. Great. And what number article is it in</p> <p>23 that C.V.?</p> <p>24 A. 41.</p> <p>25 Q. And can you explain for me this acronym,</p>	<p style="text-align: right;">Page 44</p> <p>1 you have different inputs for the demographics into</p> <p>2 racially polarized voting analysis when the results are</p> <p>3 going to be similar between using the BISG method or</p> <p>4 the CVAP method, and when the CVAP method begins to</p> <p>5 produce unreliable estimates, whereas, the BISG method</p> <p>6 may not. So, that was the core of the paper.</p> <p>7 Q. And when do CVAP estimates begin to provide</p> <p>8 less reliable estimates?</p> <p>9 MS. THEODORE: Objection to form.</p> <p>10 A. Well, in the paper, what we show -- and we</p> <p>11 focus most of the analysis, by the way, on Florida, I</p> <p>12 believe, and another smaller jurisdiction. But we also</p> <p>13 did -- no, sorry, Georgia. But I also did some</p> <p>14 replication in North Carolina, given the data and the</p> <p>15 general finding is that in areas where there are</p> <p>16 relatively few precincts and -- those are areas where</p> <p>17 the CVAP estimates, when you plug those into the</p> <p>18 ecological imprints models, the results appear to be</p> <p>19 diverging from, kind of, logical conclusions of the way</p> <p>20 that different groups are voting.</p> <p>21 Q. Other than traveling to the state to visit</p> <p>22 UNC archives during the work on the book you described,</p> <p>23 have you ever traveled to North Carolina other than for</p> <p>24 that work?</p> <p>25 A. Yes, I have.</p>
<p style="text-align: right;">Page 43</p> <p>1 BISG? Does that have to do with a surname database?</p> <p>2 A. Yes. It is Bayesian Improved Surname</p> <p>3 Geocoding.</p> <p>4 Q. Okay. And, so, I notice a reference to</p> <p>5 CVAP. Is that, Citizens Voting Age Population?</p> <p>6 A. Correct.</p> <p>7 Q. So, did that work focus on any specific</p> <p>8 group of voters in the electorate?</p> <p>9 A. It examined voting patterns between whites,</p> <p>10 blacks, I believe Hispanics, and Asians. I think</p> <p>11 that's -- I mean, they were included in the analysis.</p> <p>12 Q. Okay. So, other than this book that you</p> <p>13 described, and this paper, Number 41 in your C.V., have</p> <p>14 you ever done any other work in North Carolina prior to</p> <p>15 your work in this case?</p> <p>16 A. I am just looking at my C.V. really</p> <p>17 quickly.</p> <p>18 Q. Uh-huh.</p> <p>19 A. That seems correct. I have not.</p> <p>20 Q. And in your paper that you described, the</p> <p>21 title is, "Comparing BISG to CVAP Estimates", is it</p> <p>22 fair to understand that paper looked at trying to</p> <p>23 determine reliability between BISG and CVAP estimates?</p> <p>24 MS. THEODORE: Objection to form.</p> <p>25 A. That paper was looking at comparing when</p>	<p style="text-align: right;">Page 45</p> <p>1 Q. Okay. When?</p> <p>2 A. Let me think. Probably 2005 or 2006.</p> <p>3 Q. Have you traveled since then to North</p> <p>4 Carolina?</p> <p>5 A. Well, I was there in 2012 or '13 or so,</p> <p>6 maybe 2011, or something in that time range. And then</p> <p>7 I went back to North Carolina in maybe 2015, 2016.</p> <p>8 Q. Was one of the dates you just identified</p> <p>9 the date when you went to work at the UNC archives?</p> <p>10 A. Not the last date. I was there for family</p> <p>11 reasons or vacation or something.</p> <p>12 Q. But the 2012, 2013 date?</p> <p>13 A. Yeah. That sounds right.</p> <p>14 Q. Have you ever lived in North Carolina?</p> <p>15 A. No.</p> <p>16 Q. Have you ever had a job in North Carolina?</p> <p>17 A. No.</p> <p>18 Q. Have you ever spoken with any North</p> <p>19 Carolina voters about their voting behavior?</p> <p>20 A. I mean, I have known people in North</p> <p>21 Carolina who were professors and we talk politics, so I</p> <p>22 guess the answer is, yes.</p> <p>23 Q. Okay. Anyone other than professors?</p> <p>24 A. Probably not.</p> <p>25 Q. Would you consider yourself to be an expert</p>

<p style="text-align: right;">Page 46</p> <p>1 in North Carolina politics?</p> <p>2 A. I would not be the kind of person that</p> <p>3 someone would call me and ask me my opinion about North</p> <p>4 Carolina politics for, like, a media interview or</p> <p>5 something.</p> <p>6 Q. Would you agree with the statement that</p> <p>7 black-preferred candidates are not always black?</p> <p>8 A. I would agree with that.</p> <p>9 Q. Would you agree that it is possible for a</p> <p>10 non-majority minority district to be represented by a</p> <p>11 candidate of choice of the black community?</p> <p>12 MS. THEODORE: Objection.</p> <p>13 A. Can you just rephrase that? I think I know</p> <p>14 what you mean, but I want to be clear.</p> <p>15 Q. Sure. Can a district that is drawn at a</p> <p>16 below 50% minority voting age population elect a</p> <p>17 candidate of choice of that minority community?</p> <p>18 A. Certainly.</p> <p>19 Q. Okay. Let's turn to Page 2 of your report.</p> <p>20 Would you like us to share it, or do you have it,</p> <p>21 Dr. Collingwood?</p> <p>22 A. I have it.</p> <p>23 Q. The last paragraph on Page 2 list the data</p> <p>24 you relied on to form your opinions in this case; is</p> <p>25 that right?</p>	<p style="text-align: right;">Page 48</p> <p>1 Q. Why not?</p> <p>2 A. This is already a large number of elections</p> <p>3 to analyze, I think it is in the high 40's, and the</p> <p>4 results were just so overwhelming in terms of racially</p> <p>5 polarized voting that it just didn't seem necessary, to</p> <p>6 me, to analyze primary elections.</p> <p>7 Q. Is it your understanding that primary</p> <p>8 elections involve a different part of the electorate</p> <p>9 than general elections?</p> <p>10 A. Well, certainly there is going to be some</p> <p>11 voters that vote in primaries and generals, and both,</p> <p>12 but, typically, primary elections have significantly</p> <p>13 lower voter turnout. And, so, they are typically not a</p> <p>14 good reflection of the overall voting body. It is one</p> <p>15 reason why many people, many experts put lower weight</p> <p>16 on primary elections.</p> <p>17 Q. Do you place lower weight on primary</p> <p>18 elections?</p> <p>19 A. As a general rule, general elections are</p> <p>20 going to carry more weight, but it is a case-by-case</p> <p>21 situation. There might be -- for example, if the</p> <p>22 blocking occurs -- say, white vote blocking occurs at a</p> <p>23 certain level and not another one, maybe the primary</p> <p>24 elections might make more sense. Some states have top</p> <p>25 two primaries where your -- you know, the pool of</p>
<p style="text-align: right;">Page 47</p> <p>1 A. Correct.</p> <p>2 Q. Did you rely on any data that is not listed</p> <p>3 here?</p> <p>4 A. I don't believe so.</p> <p>5 Q. Let's turn to Page 4 of your report.</p> <p>6 A. Okay.</p> <p>7 Q. In the section where you describe</p> <p>8 ecological inference, in the second paragraph, I see</p> <p>9 you note that, "This method is designed to estimate</p> <p>10 vote choice". Do you see that?</p> <p>11 A. Yes.</p> <p>12 Q. So, is it fair to say that the numbers</p> <p>13 produced by your analysis are not actual figures of how</p> <p>14 voters cast ballots, but their estimates?</p> <p>15 MS. THEODORE: Objection to form.</p> <p>16 A. Yes. Ecological inference is a statistical</p> <p>17 technique that estimates, in this case, voter choice by</p> <p>18 race. We do not have access to how voters of different</p> <p>19 racial groups cast their ballots in terms of vote</p> <p>20 choice. That is unavailable due to privacy reasons.</p> <p>21 Q. On the same page, you identify a list of</p> <p>22 elections analyzed. Do you see that?</p> <p>23 A. I do.</p> <p>24 Q. Did you analyze any primary elections?</p> <p>25 A. No.</p>	<p style="text-align: right;">Page 49</p> <p>1 voters would include both republicans and democrats,</p> <p>2 for example, so every state is going to be different</p> <p>3 with regards to how they conduct their primary</p> <p>4 elections.</p> <p>5 And, so, it is just a little -- typically,</p> <p>6 a little less useful, primary elections. In addition,</p> <p>7 the turnout rates are so low, typically, that I</p> <p>8 typically place more weight on the general elections.</p> <p>9 Q. And for your work in this case, did you</p> <p>10 conduct any form of analysis to determine whether the</p> <p>11 blocking, to use your own words, occurs at the primary</p> <p>12 or general election?</p> <p>13 A. No. The analysis I did -- I didn't end up</p> <p>14 analyzing any primaries here, and, so, I did not</p> <p>15 determine whether blocking is occurring at the primary</p> <p>16 level. And, so, I focused -- you know, the blocking is</p> <p>17 clearly a clearing of the general election.</p> <p>18 Ultimately, at the end of the day, that's -- you know,</p> <p>19 that's what matters because the person who wins the</p> <p>20 general is the person who actually ascends to office.</p> <p>21 Q. And based on a study of general elections</p> <p>22 only, can you tell the Court anything about whether</p> <p>23 white democrats preferred different primary candidates</p> <p>24 than black democrats?</p> <p>25 A. I did not conduct a primary analysis so I</p>

<p style="text-align: right;">Page 50</p> <p>1 can't speak on that.</p> <p>2 Q. Let's go to Page 1 of your report. I</p> <p>3 notice there in the second sentence, you thought "RPV</p> <p>4 occurs when a majority of white voters cast ballots for</p> <p>5 the same set of candidates, and the majority of</p> <p>6 minority voters cast ballots for a different set of</p> <p>7 candidates". Do you see that?</p> <p>8 A. I do see that.</p> <p>9 Q. And I see you make reference to 50% plus 1</p> <p>10 to define majority. Do you see that?</p> <p>11 A. I do.</p> <p>12 Q. So, I am trying to get an understanding of</p> <p>13 racially polarized voting and when you find it. Is it</p> <p>14 correct to understand from this statement that you find</p> <p>15 racially polarized voting where -- at these levels, and</p> <p>16 can even be found where there is crossover voting?</p> <p>17 MS. THEODORE: Objection to form.</p> <p>18 A. Right. So, the technical definition, and I</p> <p>19 think the one that all of us who are experts begin our</p> <p>20 analysis with, specifically in a candidate -- in a two</p> <p>21 candidate dynamic, which most of these elections are</p> <p>22 two candidates, or two serious candidates in terms of</p> <p>23 vote choice: So, you could have a situation where 51%</p> <p>24 of black voters votes for one candidate, and 51% of</p> <p>25 white voters vote for a different candidate.</p>	<p style="text-align: right;">Page 52</p> <p>1 voters as cohesive around that candidate?</p> <p>2 A. No.</p> <p>3 Q. So, when does cohesion begin?</p> <p>4 MS. THEODORE: Objection to form.</p> <p>5 A. I mean, typically around 50% plus 1, and</p> <p>6 then it gets more and more cohesive as you go to 60 and</p> <p>7 70 and 80. So, as you go up, it gets more and more</p> <p>8 cohesive.</p> <p>9 Q. Do you apply a bright line number of when</p> <p>10 something is cohesive or not?</p> <p>11 A. I would say most social scientists</p> <p>12 typically do not apply bright line rules, as is more</p> <p>13 common, potentially, in the legal field, because we</p> <p>14 know that situations are contextual, and sometimes</p> <p>15 there are data limitations and confidence issues and --</p> <p>16 not, like, personal confidence issues, statistical</p> <p>17 confidence issues. And, so, I typically do not apply a</p> <p>18 bright line.</p> <p>19 Q. Okay. Let's turn to Page 6 and 7 of your</p> <p>20 report. Here I am looking at the section titled,</p> <p>21 Racially Polarized Voting - Statewide. Do you see</p> <p>22 that?</p> <p>23 A. I do.</p> <p>24 Q. Now, reading the last paragraph on Page 7,</p> <p>25 I see that you are finding that white voters supported</p>
<p style="text-align: right;">Page 51</p> <p>1 So, there is substantial crossover voting</p> <p>2 among white voters voting for the black-preferred</p> <p>3 candidate, but that would still, typically, be RPV.</p> <p>4 That's not what you are seeing in this case, obviously,</p> <p>5 in the -- you know, in North Carolina. But in terms of</p> <p>6 a technical definition, I would think that that would</p> <p>7 -- all experts would agree that that is the racially</p> <p>8 polarized voting.</p> <p>9 Q. Okay. Do the terms, crossover voting and</p> <p>10 cohesion, mean the same thing to you?</p> <p>11 A. No, I wouldn't say they mean the same thing</p> <p>12 to me.</p> <p>13 Q. Can you explain the difference, in your own</p> <p>14 words?</p> <p>15 A. Yes. Cohesion is, more or less, the degree</p> <p>16 that a racial population supports a candidate, or set</p> <p>17 of candidates. So, for example, if 99% of black voters</p> <p>18 support a candidate, and they do that repeatedly, they</p> <p>19 are extremely cohesive.</p> <p>20 Crossover voting is just -- typically, the</p> <p>21 way that we think about it is, what percent of white</p> <p>22 voters are crossing over to vote for the</p> <p>23 black-preferred candidate.</p> <p>24 Q. If a group of white voters support a</p> <p>25 candidate with 49% of their vote, would you view white</p>	<p style="text-align: right;">Page 53</p> <p>1 black-preferred candidates on average between 25% and</p> <p>2 31% between the years 2016 and 2022 on a statewide</p> <p>3 basis. Do I understand that correctly?</p> <p>4 A. That is correct.</p> <p>5 Q. Would it be fair to refer to this range of</p> <p>6 values, 25% to 31%, as a crossover percentage?</p> <p>7 A. Yes.</p> <p>8 Q. If a Court wanted to determine whether this</p> <p>9 voting pattern was due to a voter's racial or a</p> <p>10 partisan affiliation, how would it do that?</p> <p>11 A. Sorry. Say that again?</p> <p>12 Q. Sure. If a Court wanted to determine</p> <p>13 whether this voting pattern was due to a voter's racial</p> <p>14 or partisan affiliation, how would the Court do that?</p> <p>15 A. I don't -- in this particular context, that</p> <p>16 really can't be done given the data, so it would have</p> <p>17 to, basically, do a historical analysis, like what we</p> <p>18 were talking about earlier, and look at trends across</p> <p>19 time at key moments in time in order to do that.</p> <p>20 So -- and that's not what we are doing</p> <p>21 here. We are looking at racially polarized voting,</p> <p>22 whether voters of different races vote differently.</p> <p>23 Q. And that historical analysis that you</p> <p>24 described earlier and just referenced, did you conduct</p> <p>25 that in this case?</p>

<p style="text-align: right;">Page 54</p> <p>1 A. No.</p> <p>2 Q. Okay. Let's go to Page 11 of your report.</p> <p>3 I am reading the section titled, Demonstration District</p> <p>4 Areas. Do you see that?</p> <p>5 A. Yes.</p> <p>6 Q. About midway through the last paragraph on</p> <p>7 that page, I see a reference to, "As time goes on".</p> <p>8 Can you see that?</p> <p>9 A. Yes.</p> <p>10 Q. This statement in your report, "As time</p> <p>11 goes on", that refers to four election years, 2016,</p> <p>12 2018, 2020 and 2022; is that correct?</p> <p>13 A. That's correct.</p> <p>14 Q. Let's go to Page 19 of your report. I am</p> <p>15 looking at a section titled, Demonstration Maps. Do</p> <p>16 you see that?</p> <p>17 A. Yes.</p> <p>18 Q. I see a reference here to the acronym,</p> <p>19 CVAP. Does that mean Citizens Voting Age Population?</p> <p>20 A. Correct.</p> <p>21 Q. On my review of your report, this is the</p> <p>22 only time you ever reference CVAP. Does that sound</p> <p>23 right to you?</p> <p>24 A. In terms of an analysis. And I believe</p> <p>25 this is what I was talking about earlier regarding</p>	<p style="text-align: right;">Page 56</p> <p>1 at the precinct, or vote tabulation district, of people</p> <p>2 who voted in that election and what the race was. So,</p> <p>3 tabulations of that.</p> <p>4 So, when you are going to do racially</p> <p>5 polarized voting in at state like North Carolina,</p> <p>6 that's the data that one will use. And it's the --</p> <p>7 basically, the gold standard. I wish every state had</p> <p>8 that.</p> <p>9 We don't have to estimate who voted and</p> <p>10 what their race is, and the distributions. We just</p> <p>11 know. We know the answer.</p> <p>12 Q. As somebody who has litigated these cases,</p> <p>13 I agree. It would be nice if every state did this.</p> <p>14 Now, I see a section in your report, and we</p> <p>15 will get to it a little later, but a section in your</p> <p>16 report titled, BVAP Analysis. Do you recall that</p> <p>17 section?</p> <p>18 A. Yes.</p> <p>19 Q. And did you use BVAP in the analysis, in</p> <p>20 that section of the report?</p> <p>21 A. Yes, I did.</p> <p>22 Q. And did you use CVAP in your analysis, in</p> <p>23 that section of the report?</p> <p>24 A. No, I was focusing on voting age population</p> <p>25 in that section.</p>
<p style="text-align: right;">Page 55</p> <p>1 Gingles I, this section. I think --</p> <p>2 Q. Why did -- go ahead.</p> <p>3 A. No, go ahead.</p> <p>4 Q. Why didn't you use CVAP in your analysis?</p> <p>5 MS. THEODORE: Objection to form.</p> <p>6 A. Yeah, could you -- what analysis? Could</p> <p>7 you be a little more specific?</p> <p>8 Q. You conducted an RPV analysis in this case,</p> <p>9 correct?</p> <p>10 A. That's correct.</p> <p>11 Q. Did you use CVAP numbers instead of BVAP</p> <p>12 numbers in conducting that RPV analysis?</p> <p>13 A. I didn't use either of those numbers in</p> <p>14 terms of when I conducted the RPV analysis.</p> <p>15 Q. And did you use CVAP in any analysis in</p> <p>16 your opening report?</p> <p>17 A. I do not think so. No.</p> <p>18 Q. You mentioned that you did not use BVAP or</p> <p>19 CVAP in your RPV analysis. What data did you use in</p> <p>20 your RPV analysis to understand black voting age</p> <p>21 population?</p> <p>22 A. Well, we have the -- as people who do this,</p> <p>23 North Carolina is one of a handful of states that</p> <p>24 provides race on the voter file. And in addition to</p> <p>25 that, the State Board of Elections provides breakdowns</p>	<p style="text-align: right;">Page 57</p> <p>1 Q. Well, CVAP is a type of voting age</p> <p>2 population, isn't it?</p> <p>3 A. It is, it is, but -- yeah, in this case, I</p> <p>4 was looking at -- you know, I thought it could be</p> <p>5 helpful to look at the actual voting age population</p> <p>6 numbers. Some states are -- you know, look at them,</p> <p>7 and so that's why we -- you know, I looked at that.</p> <p>8 Q. Is it because the BVAP figures here were</p> <p>9 more accurate than CVAP figures?</p> <p>10 MS. THEODORE: Objection to form.</p> <p>11 A. No. There are certain contexts where BVAP</p> <p>12 might be more useful. I'd have to go back and look and</p> <p>13 figure out all the -- trying to think. So, the issue</p> <p>14 is, we -- we are starting with BVAP as a sort of</p> <p>15 theoretical starting point.</p> <p>16 So, CVAP is not really necessary because we</p> <p>17 are saying, okay, let's -- for this particular</p> <p>18 analysis, let's say the voting age population of blacks</p> <p>19 in this area is, you know, 500 people out of 1000, so</p> <p>20 50%. This analysis then takes into account the</p> <p>21 estimate of the number of those people who actually</p> <p>22 voted by race, both BVAP and W-VAP, or WVAP.</p> <p>23 And, so, it is incorporating sort of a</p> <p>24 turnout measure into the analysis. And, so, therefore,</p> <p>25 CVAP doesn't really give us anything.</p>

<p style="text-align: right;">Page 58</p> <p>1 Q. When is CVAP more useful than BVAP in 2 voting rights cases focused solely on black and white 3 voters?</p> <p>4 MS. THEODORE: Objection to form.</p> <p>5 A. Well, every case will be, you know, 6 different. But it could be a scenario, as you get 7 further out from the census, potentially, you will 8 start to consider CVAP information to -- you know, 9 potentially, you are dealing with population changes, 10 potentially. And, so, as you start moving further away 11 from the census, which now, obviously, that's four 12 years, the CVAP numbers might come to be, you know, 13 more useful.</p> <p>14 And then, also potentially, if you're 15 looking at drawing a Gingles I district, I think CVAP 16 is the more common method because you are looking at 17 potential voters.</p> <p>18 Q. The more common method where?</p> <p>19 A. When you are drawing the Gingles I 20 district. Because you are looking at the potential 21 electorate in those circumstances. So, using CVAP data 22 over VAP data is often used in those contexts.</p> <p>23 Q. In Gingles I context?</p> <p>24 A. Correct.</p> <p>25 Q. Outside of the Demonstration Map section in</p>	<p style="text-align: right;">Page 60</p> <p>1 Q. How is it superior?</p> <p>2 A. It is superior because we have an actual 3 tabulation by precincts of the racial distribution of 4 the voters. Racial polarized voting studies is, we are 5 trying to understand how black voters vote, and how 6 white voters vote, and how, potentially, in some cases, 7 other voters vote. It makes sense, since the data we 8 are looking at are election precinct returns, that we 9 want to look at the people who actually voted, not 10 estimates of the people who voted.</p> <p>11 And in North Carolina, unlike most states, 12 we actually have the actual counts of the people who 13 voted.</p> <p>14 Q. Could you explain how CVAP is an estimate 15 of people who voted?</p> <p>16 MS. THEODORE: Objection to form.</p> <p>17 A. CVAP is not an estimate of people who 18 voted, per se, it is an estimate of the people who are 19 eligible to vote in a certain area. You can still use 20 that data to conduct racially polarized voting, if 21 that's the data that you have. Much of the time, the 22 results are sensible and -- I do use it in certain 23 contexts. I am not trying to say that -- but CVAP is 24 not an estimate, let's say, of people who voted, it is 25 an estimate of people who potentially could vote.</p>
<p style="text-align: right;">Page 59</p> <p>1 your opening report, you decided not to use CVAP for 2 the remainder of your analysis; isn't that right?</p> <p>3 MS. THEODORE: Objection to form.</p> <p>4 A. Just really wasn't -- I had -- I didn't 5 need to use it. It wasn't necessary for what I was 6 doing.</p> <p>7 Q. Why not?</p> <p>8 A. Well, I focused primarily on racially 9 polarized voting, and that serves as the bulk of the 10 analysis. And, there, I have data that's superior to 11 CVAP, so I am going to use that. And then when it 12 comes to the BVAP analysis, as I already discussed, it 13 is unnecessary to use CVAP in that case, because in 14 that analysis, I am, in fact, accounting for turnout.</p> <p>15 And that's really what we are focusing on. 16 We are trying to get the best estimate of the actual 17 voters in the race. And, so -- and then the 18 performance analysis, you are just simply looking at 19 whether -- what a district looks like and whether one 20 candidate won versus another candidate won. And, so, 21 in those contexts, the CVAP is not necessary.</p> <p>22 Q. Earlier you said that you had data that was 23 superior to CVAP, in order to conduct your analysis. 24 Do you remember saying that?</p> <p>25 A. Yes.</p>	<p style="text-align: right;">Page 61</p> <p>1 Q. Okay. Could we turn to Pages 27 through 29 2 of your report?</p> <p>3 A. Okay.</p> <p>4 Q. Okay. I'd like to ask you a few questions 5 about the charts on these pages. And I will ask you 6 some questions, just, how they work, and understand 7 that they apply to whenever you put this chart forward. 8 But let me just ask the question and we can proceed 9 from there.</p> <p>10 On Page 27, I am looking at an election for 11 2022 Court Appeals 08. Do you see that?</p> <p>12 A. Sorry. Maybe my headphone is (indicating). 13 Oh, I can hear you now. I think. There was -- can you 14 restate your question, please?</p> <p>15 Q. Sure. I am looking at Figure 14 on Page 27 16 of your opening report.</p> <p>17 A. Okay.</p> <p>18 Q. This it is titled, Racially Polarized 19 Voting 2022 Contests, Statewide. Do you see that?</p> <p>20 A. I do.</p> <p>21 Q. I am looking at the contest titled, 2022 22 Court Appeals 08. Do you see that?</p> <p>23 A. I do.</p> <p>24 Q. I see an estimated black vote share for 25 Candidate Thompson at 95.8%. Did I read that right?</p>

<p style="text-align: right;">Page 62</p> <p>1 A. You did.</p> <p>2 Q. Is it safe to call Candidate Thompson the</p> <p>3 candidate of choice of black voters in that election?</p> <p>4 A. Yes.</p> <p>5 Q. At what level would Candidate Thompson no</p> <p>6 longer be deemed the minority candidate of choice in</p> <p>7 your view?</p> <p>8 MS. THEODORE: Objection to form.</p> <p>9 A. In this particular scenario, if Thompson is</p> <p>10 dropping in this -- say -- this is a two by two. I</p> <p>11 think this election featured, maybe, a small minority</p> <p>12 candidate, not racially a minority, just a smaller</p> <p>13 candidate who got a very few number of votes. But to</p> <p>14 say that these are the two candidates, it would be</p> <p>15 below 50 -- you know, basically at 50%.</p> <p>16 Then at that point if it is 50, there is no</p> <p>17 clear candidate of choice, but if it is over 50%, then</p> <p>18 Thompson would be considered the black-preferred</p> <p>19 candidate.</p> <p>20 Q. I see an estimated white vote share for</p> <p>21 that same candidate, Candidate Thompson, at 29.7%. Did</p> <p>22 I read that correctly?</p> <p>23 A. Yes.</p> <p>24 Q. So, am I understanding correctly that,</p> <p>25 roughly, a third of white voters statewide voted for</p>	<p style="text-align: right;">Page 64</p> <p>1 would agree that there is more crossover voting in the</p> <p>2 demonstration districts relative to the -- sorry --</p> <p>3 more crossover voting in the enacted district than the</p> <p>4 demonstration district.</p> <p>5 Q. So, in Figure 15, I am seeing crossover</p> <p>6 voting ranging between 19.4% to 22.3%. Did I read that</p> <p>7 right?</p> <p>8 MS. THEODORE: Objection to form.</p> <p>9 A. Are you -- I see lower numbers in</p> <p>10 District 2.</p> <p>11 Q. Okay. Let me re-ask the question. I am</p> <p>12 looking at Figure 15 in District 1. I am seeing</p> <p>13 crossover voting ranging between 19.4% to 22.3%. Did I</p> <p>14 read that right?</p> <p>15 A. Yes.</p> <p>16 Q. And then Figure 16, when I look at the</p> <p>17 demonstration area, I am seeing crossover voting</p> <p>18 ranging from 10% up to 13.4%. Did I read that</p> <p>19 correctly?</p> <p>20 A. That's correct.</p> <p>21 Q. Turning to the 2020 Contest on Pages 31 and</p> <p>22 32. These are Figures 17 and 18. In Figure 17 --</p> <p>23 MS. THEODORE: I'm sorry to interrupt,</p> <p>24 Kate. I think you said 31 and 32. I think that's 18</p> <p>25 and 19.</p>
<p style="text-align: right;">Page 63</p> <p>1 the black-preferred candidate in that election?</p> <p>2 A. Correct.</p> <p>3 Q. The way we just read this specific</p> <p>4 election, is that the way we should read all similar</p> <p>5 RPV charts in your report, as far as black vote share</p> <p>6 and white vote share?</p> <p>7 A. Yes.</p> <p>8 Q. Looking now at the chart on Page 28 and 29.</p> <p>9 On Page 28, we have Figure 15, Racially Polarized</p> <p>10 Voting 2022 Contests, Enacted State Senate Districts 1</p> <p>11 and 2. Do you see that?</p> <p>12 A. Yes.</p> <p>13 Q. And on Page 29, you have Figure 16 titled,</p> <p>14 Racially Polarized Voting 2022 Contests, Demonstration</p> <p>15 District County Area. Is that right?</p> <p>16 A. Correct.</p> <p>17 Q. Now, comparing the results in these charts</p> <p>18 between Figure 15 and Figure 16, I am seeing almost</p> <p>19 twice as much crossover voting in the 2022 contest in</p> <p>20 the areas where Enacted SD1 and 2 were drawn as</p> <p>21 compared to the demonstration to county areas. Would</p> <p>22 you agree with that?</p> <p>23 MS. THEODORE: Objection to form.</p> <p>24 A. Twice as much? I think that's going to</p> <p>25 depend on which district you are looking at. But I</p>	<p style="text-align: right;">Page 65</p> <p>1 MS. McKNIGHT: Oh, pardon me. Thank you,</p> <p>2 Elisabeth. Yes, that's 18 and 19.</p> <p>3 A. Okay.</p> <p>4 Q. So, Figures 18 and 19 on Pages 31 and 32.</p> <p>5 I am seeing SD1 with crossover voting ranging from 17.2</p> <p>6 to 22.6%? Did I read that right?</p> <p>7 A. Yes, I think so.</p> <p>8 Q. And then in Figure 19 on Page 32, I am</p> <p>9 seeing that in the demonstration area, this has</p> <p>10 crossover voting with a range of 8.9 to 18%. Am I</p> <p>11 reading that right?</p> <p>12 A. That looks right to me.</p> <p>13 Q. Let's go back so Page 1 of your report. I</p> <p>14 have just a few more questions before we take another</p> <p>15 break. Can you go on for another few minutes,</p> <p>16 Dr. Collingwood?</p> <p>17 A. Yes.</p> <p>18 Q. Let's go back to Page 1 of your report.</p> <p>19 A. Okay.</p> <p>20 Q. You state that you examined how cohesive</p> <p>21 black and white voters are respectively in support of</p> <p>22 candidates of choice. Do you see that?</p> <p>23 A. Yes.</p> <p>24 Q. Actually, pardon me, Dr. Collingwood. I</p> <p>25 think we have already gone over this and I have your</p>

<p style="text-align: right;">Page 66</p> <p>1 testimony on the points I'd like to ask here. So, we 2 can actually break here and I can start a new section 3 when we come back. 4 A. Okay. 5 MS. McKNIGHT: If we can go off the record, 6 Ms. Linberg. 7 - - - - - 8 (Off the record.) 9 - - - - - 10 BY MS. McKNIGHT: 11 Q. Okay. So, welcome back. During that 12 break, did you speak with counsel at all? 13 A. I did not. 14 Q. Did you speak with anyone during the break? 15 A. My wife. 16 Q. Anyone else? 17 A. My dog. He gets petted. 18 Q. He is a good boy, correct? 19 A. He is. He is a good boy. 20 Q. Okay. So, let's go back to your report. 21 On Page 1 of your report, I note that you state that 22 you examined whether the 2023-enacted SD1 and SD2 would 23 perform for black voters. And you compared those 24 results against the four demonstration plans from 25 Plaintiffs. Did I get that right? A. Correct.</p>	<p style="text-align: right;">Page 68</p> <p>1 A. That's correct. That's how that process 2 works. 3 Q. So, I notice in the second sentence on 4 Page 13, you discuss full counties. Why are you 5 referencing full counties here when you are subsetting 6 into specific districts? 7 A. Those are the counties that comprise each 8 one of those respective districts. 9 Q. Okay. Now, on Page 16, four lines down in 10 that paragraph, you state, "In general, in situations 11 involving new districts that have not been used before, 12 statewide races involving candidates at the top of the 13 ticket are most relevant". Do you see that? 14 A. Yes. 15 Q. You would agree with me that elections in 16 SD1 and SD2 would not be statewide elections, correct? 17 A. That would be correct. Once those SD1 and 18 SD2 are -- actually have an election in them, then that 19 becomes a different -- it is not a statewide election. 20 Q. Well, is a senate district election in 21 North Carolina ever statewide? 22 A. Correct, it never is. 23 Q. And would elections in SD1 and SD2, their 24 placement on a ballot, would it be considered down 25 ballot, as compared to the top of the ticket, statewide</p>
<p style="text-align: right;">Page 67</p> <p>1 MS. THEODORE: Objection to form. 2 Q. Let's turn to Page 12 of your report. 3 There is a section here titled, Electoral Performance 4 Analysis. Is this the section that details the results 5 of your examination of the -- of whether the 6 2023-enacted plans would perform for black voters? 7 A. Yes. 8 Q. So, one question, just, I didn't understand 9 what you meant. I am trying to understand what you 10 mean. At the top of Page 13, you reference, "subset 11 the precinct data to the appropriate counties". Do you 12 mean allocate? What do you mean by subset? 13 A. For example, I might have all of the 14 precincts in the full state of North Carolina and, so, 15 I would then subset that whole data to be precincts, 16 but only in the counties that are comprising Districts 17 1 and 2, respectively. 18 Q. I see. I see. So, just -- you created a 19 subset of all precincts in the state for just those 20 precincts that are within the enacted districts; is 21 that fair? 22 A. Correct. 23 Q. Is it fair to understand, you did that same 24 thing for the demonstration area? You created a subset 25 of all the precincts in the demonstration area?</p>	<p style="text-align: right;">Page 69</p> <p>1 election? 2 MS. THEODORE: Objection to form. 3 A. Well, I would say down-ballot races are -- 4 people might have different -- experts might have 5 different angles on this. It would be physically, 6 almost certainly, located down ballot, but so might a 7 congressional race, for example, which can induce a lot 8 of spending and a lot of attention. 9 State senate districts could be extremely 10 competitive. And, so, typically, people think of 11 down-ballot races as, you know, courts of appeals type 12 races, maybe something like a treasurer, those types of 13 -- a railroad commissioner, for example, in Texas. 14 Those tend to be the -- when we think of down ballot, 15 that's what we typically think of. 16 Q. So, would you consider a state senate 17 district race as down ballot? 18 A. Not necessarily. It could be in some cases 19 if turnout is low and there is -- for example, it is 20 not a competitive contest and, therefore, there is not 21 a lot of advertising going on. But it could be fairly 22 competitive and you could have lot of spending if the 23 contest is, you know, yeah, very competitive. 24 Q. But for your work in this case, you didn't 25 study any elections in state senate districts, correct?</p>

<p style="text-align: right;">Page 70</p> <p>1 A. That's correct.</p> <p>2 Q. And, so, I see on Page 17, the second</p> <p>3 sentence in the first full paragraph states, "Many of</p> <p>4 the down-ballot races were more competitive". Do you</p> <p>5 see that?</p> <p>6 A. Where is this?</p> <p>7 Q. Page 17, the first full paragraph, second</p> <p>8 sentence.</p> <p>9 A. Yes.</p> <p>10 Q. Okay. So, based on your analysis, you --</p> <p>11 and not studying any senate district elections in this</p> <p>12 case, can you tell the Court anything about whether the</p> <p>13 senate district elections in SD1 or SD2 would be more</p> <p>14 or less competitive than top of the ticket statewide</p> <p>15 elections?</p> <p>16 A. I can. Yes, I can. They would -- they</p> <p>17 would be -- as currently enacted, they would be less</p> <p>18 competitive. But, again, that's because I conducted a</p> <p>19 performance analysis based on various contests and</p> <p>20 different units, look at the full picture of it.</p> <p>21 But because we have not had actual</p> <p>22 elections in these districts for the post itself, I can</p> <p>23 not definitively say how competitive or uncompetitive</p> <p>24 it would be. We will have to wait until the next round</p> <p>25 of general elections.</p>	<p style="text-align: right;">Page 72</p> <p>1 have to use when elections have not taken place. We</p> <p>2 have to use, basically, previous data, and then we</p> <p>3 subset it to the specific areas of the enacted</p> <p>4 district. And while one individual election may be</p> <p>5 more particularly useful for a variety of reasons --</p> <p>6 and that's a case-by-case situation -- I think it is</p> <p>7 wise to look at a large share of elections.</p> <p>8 And, so, you can see if there are certain</p> <p>9 elections, certain anomalies, what is possible, what's</p> <p>10 not, is there an over-trend, time; those types of</p> <p>11 things. And then you can get a pretty good read on how</p> <p>12 that district is going to perform into the future.</p> <p>13 Q. So, I heard you answer earlier that you</p> <p>14 believed that a state senate district election in SD1</p> <p>15 or 2 would be less competitive than a top ticket race.</p> <p>16 Did I hear you correctly?</p> <p>17 A. Yes. What -- a top of the ticket race in</p> <p>18 statewide. Statewide.</p> <p>19 Q. Okay. And when I read Page 17 of your</p> <p>20 report, you reference that many of the down-ballot</p> <p>21 races were more competitive than top of the ticket,</p> <p>22 statewide. Did I read that correctly?</p> <p>23 MS. THEODORE: Objection to form.</p> <p>24 A. I think what I'm saying is, there are many</p> <p>25 competitive contests, also, down ballot as well.</p>
<p style="text-align: right;">Page 71</p> <p>1 Q. You referenced a performance analysis, but</p> <p>2 that performance analysis didn't include an analysis of</p> <p>3 any state senate elections, right?</p> <p>4 A. Correct.</p> <p>5 Q. So, how can you make the conclusion about</p> <p>6 the performance of a state senate election and whether</p> <p>7 it is more or less competitive than top of the ticket</p> <p>8 election?</p> <p>9 A. Well, we -- we can -- we could, for</p> <p>10 example, look at the top of ticket contest and see how</p> <p>11 competitive, you know, the, say, top, you know,</p> <p>12 president, governor, senate, U.S. senate, and maybe</p> <p>13 lieutenant governor, attorney general; how competitive</p> <p>14 those contests are statewide.</p> <p>15 And then we could look at all of these</p> <p>16 elections that I have included in this analysis and get</p> <p>17 a general read, maybe taking some sort of overall</p> <p>18 average. Or in this case, you can read down the charts</p> <p>19 and you can see how competitive that jurisdiction</p> <p>20 likely is going to be into the future.</p> <p>21 Q. So, are you making an assumption that an</p> <p>22 election in a state senate district would fall</p> <p>23 somewhere in the range of performance between a top</p> <p>24 ticket contest and the lower ticket contest?</p> <p>25 A. That is a -- the sort of, built-in logic we</p>	<p style="text-align: right;">Page 73</p> <p>1 Q. So, when you write more competitive, what</p> <p>2 do you mean by, more competitive?</p> <p>3 A. I see. The election results are very</p> <p>4 close.</p> <p>5 Q. What I am trying to get an understanding of</p> <p>6 is, why in your report you came to a conclusion that</p> <p>7 many down-ballot races were more competitive, but today</p> <p>8 in deposition, you are saying that a state senate</p> <p>9 district election would be less competitive. I am</p> <p>10 trying to square the two.</p> <p>11 MS. THEODORE: Objection to form.</p> <p>12 Q. Can you help me understand?</p> <p>13 A. The difference is, is the analysis or the</p> <p>14 discussion that I had in terms of the competitive or</p> <p>15 not competitive with regards to down-ballot contests is</p> <p>16 specific to overall elections in the state as a whole.</p> <p>17 My assessment here that State Senate Districts 1 and 2</p> <p>18 will be relatively uncompetitive as currently enacted</p> <p>19 is based on a subset of the statewide contest to the</p> <p>20 boundaries of State Senate 1 and 2 respectively. So,</p> <p>21 they are different units of analysis, as it were.</p> <p>22 Q. So, stepping back, could you tell me your</p> <p>23 understanding of the phrase, district effectiveness</p> <p>24 analysis?</p> <p>25 MS. THEODORE: Objection to form.</p>

<p style="text-align: right;">Page 74</p> <p>1 A. That's -- I have heard that term before. I 2 don't use it that much. I think if I had to speculate 3 what it means is, a certain threshold at which a 4 district -- that is, certain percentage of, say, black 5 voters, and what percentage of that percentage of black 6 voters in the area of that district, would that 7 district then tend to elect black-preferred candidates. 8 Q. Have you ever come across a district 9 effectiveness analysis in your work? 10 A. Well, certainly, this type of analysis is 11 conducted. I haven't seen it that much in actual 12 expert reports, but I have seen it conducted at various 13 stages of a map drawing process, where somebody is 14 trying to, sort of, determine this number roughly. 15 And, so, I have certainly seen it. 16 Q. Okay. And do you believe you have provided 17 the Court a district effectiveness analysis in your 18 reports in this case? 19 A. The -- yes, something, as I have enunciated 20 in my understanding of what it would be, I have 21 conducted one, yes. 22 Q. And is that in a section titled, BVAP 23 Analysis, in your report? 24 A. Correct. 25 Q. And why did you prepare this section of</p>	<p style="text-align: right;">Page 76</p> <p>1 counties". Do you see that list of counties there? 2 A. Yes. 3 Q. Okay. Are those the same counties you were 4 including in your demonstration area? 5 A. Yes. 6 Q. Now, the very next sentence says, "I use an 7 area wider than any of the demonstration districts". 8 Do you see that? 9 A. I do. 10 Q. What do you mean by that? 11 A. So, the demonstration districts are a 12 subset -- a smaller version of all of these counties 13 that I have included in that list. And, so, it is a 14 larger population base than the individual specific 15 districts. So, that's what I mean by that. 16 Q. So, you mean you looked at the 17 demonstration area and then you also looked at SD1 and 18 2. Am I following? 19 MS. THEODORE: Objection to form. 20 A. Not for the BVAP analysis, but for the 21 RPV -- sorry -- for the performance analysis, that's 22 what I did. 23 Q. So, I am asking about for the BVAP 24 analysis, and pardon me, I am not understanding what 25 you are describing. Can you explain to me how the area</p>
<p style="text-align: right;">Page 75</p> <p>1 your report? 2 A. Well, I -- you know, in my conversations 3 with counsel, that was something that they were 4 interested in doing. 5 MS. THEODORE: And I'll just -- 6 Dr. Collingwood, I will interject and ask you not to 7 say anything further about conversations with counsel, 8 other than what we asked you to do or not to do, for 9 purposes of the report. 10 THE WITNESS: Okay. 11 A. So, that's why I did that. 12 Q. Okay. Are you aware that the Court found 13 that Dr. Barreto failed to conduct a district 14 effectiveness analysis in his report submitted at the 15 preliminary injunction stage of this case? 16 A. I was not aware of that. 17 Q. Let's go to Page 23 of your report. This 18 is where your section starts, titled, BVAP Analysis. 19 Do you see that? 20 A. I do. 21 Q. Okay. And let's first turn to Page 24, 22 please. And just to make sure I know what you are 23 talking about in your report, in the first paragraph 24 you state, I use an area -- strike that. 25 You discuss, "These include the following</p>	<p style="text-align: right;">Page 77</p> <p>1 you used was wider than any of the demonstration 2 districts when you conducted your BVAP analysis? 3 A. So, the BVAP analysis includes all of 4 these, I believe, 12 counties. That's an area that's 5 just larger than State Senate District 1 or State 6 Senate District 2. It is the area in which a black 7 majority district could be drawn. So, I began the 8 analysis with, okay, what's the general area in the 9 region where a black majority district could be drawn. 10 And, so, given that, I then conducted the 11 BVAP analysis to look at what the best guess, based on 12 the data of black voting age population, would need to 13 be in order to give the black-preferred candidates a 14 realistically good shot at winning an election. 15 Q. Okay. So, I understand it now. The 16 outside bounds are the -- it is the geography where 17 these 12 counties are; is that right? 18 A. Correct. 19 Q. All right. Did you ever conduct your BVAP 20 analysis on a district level, either on demonstrative 21 districts, or on the SD1 or 2? 22 A. No, because those all have a -- a specific 23 BVAP that's set in stone, and, so, that just, you know, 24 really wouldn't work. 25 Q. Did you ever think to conduct this analysis</p>

<p style="text-align: right;">Page 78</p> <p>1 on the counties that cover SD1 and SD2?</p> <p>2 A. Well, certainly, those are going to have a</p> <p>3 large overlap with these counties here. I think there</p> <p>4 -- it's almost, you know, a very similar area. So,</p> <p>5 that's why I kept it to these 12 counties, because it</p> <p>6 is the same general area.</p> <p>7 Q. I see. So, if you looked at a map and</p> <p>8 there was not overlap in the southeast of the state,</p> <p>9 would you have included any of those areas where there</p> <p>10 is not overlap of the 12 counties you studied?</p> <p>11 A. I did not look at the southeastern portion</p> <p>12 of the state. What I did is, I looked at what are the</p> <p>13 unique counties that are in SS1, what are the unique</p> <p>14 counties that are in SS2, let's put those together and</p> <p>15 then we will conduct the BVAP analysis from there.</p> <p>16 Q. Would you have conducted your BVAP analysis</p> <p>17 on SD1 or SD2? Could you have you conducted your BVAP</p> <p>18 analysis on SD1 or SD2?</p> <p>19 A. Yeah, I think I could, but the issue is, is</p> <p>20 we already know how SD1 and SD2 are -- based on the</p> <p>21 electoral performance analysis, based on how those</p> <p>22 districts are going to perform and they are not going</p> <p>23 to perform, so -- for the black-preferred candidate.</p> <p>24 And, so, it is sort of, kind of, a senseless exercise</p> <p>25 to do that.</p>	<p style="text-align: right;">Page 80</p> <p>1 for the BVAP analysis as a guide post, I think is what</p> <p>2 I write, as opposed to the actual enacted districts and</p> <p>3 what the election data show, based on 48 or so</p> <p>4 elections; what the likely outcome of those districts</p> <p>5 are going to be in terms of the black-preferred</p> <p>6 candidate being able to win.</p> <p>7 Q. Earlier on in your deposition, we discussed</p> <p>8 that voting in SD1 and SD2 showed higher white</p> <p>9 crossover voting than voting in the demonstration area.</p> <p>10 Do you remember that discussion?</p> <p>11 A. Yes.</p> <p>12 Q. So, is it possible that drawing a district</p> <p>13 that includes areas in SD1 and SD2 that are not part of</p> <p>14 your demonstrative area analysis would produce results</p> <p>15 where the BVAP necessary for that district to perform</p> <p>16 would actually be lower than the BVAP you report on the</p> <p>17 demonstrative area?</p> <p>18 MS. THEODORE: Objection to form.</p> <p>19 A. Is it possible? It may be possible, I</p> <p>20 suppose, but, you know, in a very specific type of</p> <p>21 district. So, it is possible to draw a district at a</p> <p>22 certain BVAP that's maybe lower or even higher than</p> <p>23 what I identified in the very specific nature of the</p> <p>24 people who are or are not included in that district.</p> <p>25 The numbers could be different. That's</p>
<p style="text-align: right;">Page 79</p> <p>1 Q. Would you agree with me that the</p> <p>2 performance analysis and your BVAP analysis are</p> <p>3 different types of analyses?</p> <p>4 A. They are different types of analyses, yes.</p> <p>5 Q. And would you agree with me that a BVAP</p> <p>6 analysis is meant to identify -- scratch that.</p> <p>7 Can I ask you, what is your BVAP analysis</p> <p>8 meant to identify that the performance analysis does</p> <p>9 not?</p> <p>10 A. Well, the performance analysis just looks</p> <p>11 at the actual districts that have been enacted</p> <p>12 themselves, versus illustrative districts. Those</p> <p>13 districts are real, actual districts that have been</p> <p>14 drawn by a demographer. And, so, there, all we need to</p> <p>15 do is just look at election results.</p> <p>16 The BVAP analysis is looking at a</p> <p>17 hypothetical district in the general area. That is the</p> <p>18 same general area as State Senate District 1 and State</p> <p>19 Senate District 2. And it is looking to see if we drew</p> <p>20 a district that was this percent voting age population</p> <p>21 black, what are the, you know -- will a black-preferred</p> <p>22 candidate win or not, i.e., will a black-preferred</p> <p>23 candidate, on average, get over 50% of the vote in that</p> <p>24 district.</p> <p>25 So, it is more of a hypothetical scenario</p>	<p style="text-align: right;">Page 81</p> <p>1 certainly the case. But then if that district is drawn</p> <p>2 and set in stone, we can then conduct an electoral</p> <p>3 performance analysis on it to see how it performs.</p> <p>4 Q. And you did not conduct any electoral</p> <p>5 performance on any counties in North Carolina other</p> <p>6 than the 12 identified in the demonstrative area in</p> <p>7 your report; is that right?</p> <p>8 MS. THEODORE: Objection to form.</p> <p>9 A. In this report, this is what I did. I</p> <p>10 think in the rebuttal report, I looked at a couple</p> <p>11 other counties, but I am sure we will get to that area</p> <p>12 later.</p> <p>13 Q. Do you remember which counties those were?</p> <p>14 A. I think it was Pitt and Edgecomb.</p> <p>15 Q. Page 24 of your report, you reference</p> <p>16 turnout calculations. Could you explain what you mean</p> <p>17 by turnout calculations?</p> <p>18 A. Right. So, much like we do with racially</p> <p>19 polarized voting, we can estimate voter turnout by</p> <p>20 race, and we also have -- because we have all the data</p> <p>21 at the precinct units that would allow us to do that.</p> <p>22 And, so, for example, if we have a BVAP, we set BVAP at</p> <p>23 50%.</p> <p>24 We want to know the actual share of people</p> <p>25 of black voting age population who voted, and then we</p>

<p style="text-align: right;">Page 82</p> <p>1 want to actually know the share of white voting age 2 that voted. And if there is a difference in that, then 3 the actual electoral composition of the share of voters 4 will change, you know. And, so, that is what the BVAP 5 analysis does, is, it accounts for turnout. 6 That's why we don't need to, say, look at 7 CVAP data, because we are accounting for turnout. And 8 then we take that information and incorporate how black 9 voters vote, how white voters vote, and that can give 10 us a fairly clean estimate as to how a particular 11 candidate in each simulation would do. 12 Q. And when you say, number of black voters, 13 are you calculating this number on a county-by-county 14 basis, or on the area as a whole? 15 A. No, that's calculated at the -- I am able 16 to calculate that in the 12 county region as a whole, 17 just like I am able to calculate the voting patterns of 18 blacks versus white in the region as a whole. And I 19 have data. I use data at the precinct unit in order to 20 make those estimates. 21 So, I am using the lowest possible unit in 22 order to estimate county level -- region wide level 23 turnout and, then, polarization to arrive at the -- you 24 know, how the candidate -- a theoretical candidate 25 would do in that area.</p>	<p style="text-align: right;">Page 84</p> <p>1 down at the precinct level. Did I understand you 2 correctly? 3 A. I am able to -- yes, I have that data. 4 Q. So, did your analysis report turnout in the 5 areas of SD1 and SD2? 6 A. I don't think so, no. 7 Q. Does your analysis consider incumbency? 8 A. No. 9 Q. So, I am now on Page 24 of your report 10 where you begin discussing your simulations exercise. 11 Midway through the second paragraph you state, "In this 12 way, we know then if we fix BVAP". Do you see that 13 reference? 14 A. Right. 15 Q. So, in what way? When you say, "in this 16 way", what do you mean by that? 17 A. That's the way that the simulation works, 18 is, we can simulate: In this general area, given 19 racially polarized voting estimates, and given voter 20 turnout by race estimates, we can then generate an 21 estimate: What will happen in this area when we fix 22 BVAP at 1%, at 2%, at 3%, at 4%. 23 And, so, we just keep re-doing the analysis 24 at each stage of that. And, so, as the, say, BVAP goes 25 up, and white BVAP starts to go down, we can start to</p>
<p style="text-align: right;">Page 83</p> <p>1 Q. Does your report identify turnout rates on 2 a district basis, either enacted or demonstrative? 3 A. The report does not look at turnout in 4 terms of a table that's presented, or something else 5 like that. It is incorporated into the BVAP analysis 6 itself. But the report is not looking at district 7 here, what's the turnout district, what's the turnout, 8 those types of things. No, I have not done that. 9 Q. Does your analysis estimate participation 10 in the elections at issue, meaning the state senate 11 elections? 12 MS. THEODORE: Objection to form. 13 A. I guess, could you re-clarify that 14 question? 15 Q. Sure. Are you familiar with the term, 16 endogenous elections? 17 A. Yes. 18 Q. What does it mean to you? 19 A. That would be, for example, the 2024 State 20 Senate District 1 and State Senate District 2 election. 21 Those are the jurisdictions that are under -- 22 basically, under the lawsuit that -- the area where the 23 lawsuit is taking place, and the boundaries of where 24 the lawsuit is taking place. 25 Q. You were talking about how you had turnout</p>	<p style="text-align: right;">Page 85</p> <p>1 see whether the black-preferred candidate, how they are 2 doing. And then at some point, whether that's at 42%, 3 45%, 47%, 49%, 52%, 54%, we can see in that specific 4 contest who would have -- that I'm analyzing -- which 5 specific election that I'm analyzing, who will win at 6 that level of BVAP that we fix for the simulation. 7 Q. So, walk me through this, if you will. In 8 the simulation, you program the BVAP to be -- to a set 9 figure, whether it is -- let's say it is 45%. And then 10 what is the instruction that you give the computers in 11 running the simulated maps? And if you could make it 12 very layman for me, I'd appreciate it. 13 A. Well, we have previously calculated -- we 14 previously calculated what the racially polarized 15 voting is, so we know in this 12 county area, the 16 percentage of black voters that vote for the particular 17 candidate, and then the percentage of white voters that 18 vote for that same candidate and their opponent. And 19 then we store those results so we know what those are. 20 And then we estimate what the -- we have 21 already done this -- we estimate what the overall 22 turnout rate is for blacks versus white in the area. 23 And, so, we take that number and we multiply that by 24 the BVAP, and then take that inverse for the WVAP. 25 And that will then -- for example, if you</p>

<p style="text-align: right;">Page 86</p> <p>1 have a BVAP at 45%, but black voters are voting less 2 than the share of the electorate in a particular 3 contest, the black voters are voting less than white 4 voters, that 45 will, say, drop down to 43%. Then you 5 have 43% of the electorate, say, for example, that is 6 black, 57% that is white, and then we know black 7 voters, 99% of them, are voting for this candidate. 8 So, 99% of voters of that 43%, how many 9 estimated voters is that. We do the same thing on the 10 other side, and then we can arrive at how many -- what 11 the percentage of the vote that each of the candidates 12 would get at that BVAP level. 13 Q. Would you turn to Page 25 in your report? 14 There is a chart here that says BVAP Simulation 15 Analysis, all 2020 - 2022 Contests. And it's labeled, 16 Figure 13. Do you see that? 17 A. Yes. 18 Q. What is the count indicated in the Y Axis? 19 A. That's the number of elections that are 20 falling in that particular -- the number of election 21 contests that are falling in that particular bin. 22 Q. And, so, is it a straight number? I see a 23 number, a 10. Is that -- does that mean, literally, 10 24 elections fell into that bin? 25 A. Yes.</p>	<p style="text-align: right;">Page 88</p> <p>1 kind of, more traditional -- or ensemble method that 2 people use to simulate maps to determine whether 3 something is clearly drawn from a partisan perspective. 4 Q. Thank you for that. So, now, if you add up 5 all of the count figures here, you'd get the roughly, 6 was it, about 27 elections? Do I remember that 7 correctly? 8 A. Correct. 9 Q. 27 contest. Okay. So, this chart is 10 showing how much BVAP would be needed in each of those 11 contests in order for the black-preferred candidate to 12 prevail; is that right? 13 A. That's correct. And the mean of this 14 distribution is, based on the 2022 and 2020 elections 15 that I assessed, that's the, sort of, average of what 16 the BVAP needs to be in order for the black-preferred 17 candidate, basically, to win 50% of the time, or 50.001 18 or something. So, it is about as equal opportunity as 19 one would get. 20 Q. Am I reading your chart correctly to say 21 that 12 of the 27 contests analyzed, your simulation 22 showed that the districts drawn in the demonstration 23 area would need less than 45% BVAP to elect a candidate 24 of choice? 25 A. I think that's right. I would have to</p>
<p style="text-align: right;">Page 87</p> <p>1 Q. And, so, where does this -- where do the 2 simulations -- I've dealt with simulations before, and 3 I always see very complex charts and histogram charting 4 out the results of, you know, a very large number of 5 simulated maps. I am trying to understand where -- 6 what this chart represents and where all those 7 simulated maps are, those simulated conditions are, the 8 results of your simulations. 9 A. That's it. 10 MS. THEODORE: Objection to form. 11 A. Yeah, those -- that's called an ensemble 12 simulation. That's just a different approach than what 13 I am doing. Those simulations are typically looking 14 at, you know, how -- what's the likelihood that this 15 map was drawn based on partisanship, or something like 16 that. 17 This is just a different simulation. This 18 is, hey, let's set the threshold of black voting age 19 population at different levels, let's use the tools of 20 ecological inference, racially polarized voting, to see 21 how -- you know, at what point -- so, what this plot, 22 or chart is showing is, at what point in that 23 particular election contest, in this full region, would 24 a black-preferred candidate win. 25 And, so, we are not simulating maps in a,</p>	<p style="text-align: right;">Page 89</p> <p>1 check the underlying data. Sometimes the bins are -- 2 it could be over 45 depending on which side the bin is 3 falling on, whether it's open or closed. 4 Q. If it is over 45, it would have fallen in 5 the next bin to the right of the number 45, correct? 6 A. I think that's right. Yeah, I think that's 7 right. 8 Q. This number, the third column over, does 9 that number appear to be number 7 to you? In the -- in 10 Figure 13, there are six columns. The third column 11 over from the left, just to the right of 45 and below 12 50. I am trying to identify the count on the -- 13 A. Yeah, that's going to be 47. 14 Q. That would be 7 -- oh -- oh, pardon me. 15 A. 47. So, between 45 and 47. 16 Q. Right. So, I understand that the dotted 17 vertical line is the mean at 47.07, correct? 18 A. That's correct. 19 Q. Okay. So, that column between 47.07 and 20 45, I believe that column indicates on the Y Axis, a 21 number 7, a count of 7. Is that the right read? 22 A. Correct. 23 Q. And, so, then the column, the next column 24 to the left, I believe the count there is 10. Is that 25 the right read?</p>

<p style="text-align: right;">Page 90</p> <p>1 A. Yes, I think so.</p> <p>2 Q. And then the next column over to the left,</p> <p>3 it looks like that's a count of 2. Is that the right</p> <p>4 read?</p> <p>5 A. Yeah, I think so. I have to go and look</p> <p>6 under the -- you know, pull out the actual raw data and</p> <p>7 look at that. This is just a, you know, histogram</p> <p>8 representation of that. Sometimes the -- you know, the</p> <p>9 charts that are made are -- you know, it is not always</p> <p>10 entirely -- the axis default -- axis labeling is</p> <p>11 something that the program produces.</p> <p>12 Q. I see. So, by my count, I am seeing 19 out</p> <p>13 of 27 elections analyzed fall below 47.07. Am I</p> <p>14 reading that right?</p> <p>15 A. Yeah, I think that's right.</p> <p>16 Q. And the inverse would be only 8 require --</p> <p>17 8 of the elections would have required greater than</p> <p>18 47.07 BVAP in order to perform. Is that the right</p> <p>19 read?</p> <p>20 A. I think that's right.</p> <p>21 Q. I mean, when I'm looking at this, it looks</p> <p>22 to me like most of the elections analyzed would not</p> <p>23 need 47.07 or greater BVAP to perform. In fact, it is</p> <p>24 more than twice the number of the elections over 47.07.</p> <p>25 Am I reading that right?</p>	<p style="text-align: right;">Page 92</p> <p>1 reading the first bar at a count of 2, correct?</p> <p>2 A. I mean, like, I have to look -- if you want</p> <p>3 me to -- I have to pull up the underlying data to see</p> <p>4 exactly what the count would be, or to see how the bin</p> <p>5 looks change, but that sounds about right.</p> <p>6 Q. Okay. Well, I am just trying to make sure</p> <p>7 I am reading your chart correctly. It looks like the</p> <p>8 top of that bar is about the 2 count number. Is that a</p> <p>9 fair read?</p> <p>10 A. That's what I would also conclude.</p> <p>11 Q. Okay. And then when you go back and look</p> <p>12 at your numbers, are you expecting them to vary widely</p> <p>13 from the number 2, or would it be a little over or a</p> <p>14 little under?</p> <p>15 A. No, it would be very similar to this. It's</p> <p>16 just to see exactly what the -- you know, I could have,</p> <p>17 you know, provide, just, like, the, you know, the</p> <p>18 vector of the actual BVAP levels for each contest, or</p> <p>19 something like that, that ensures a candidate will get</p> <p>20 over -- a black candidate will get over 50% of the</p> <p>21 vote. And this is just a simple histogram on top of</p> <p>22 that.</p> <p>23 Q. Okay. And, so, the next bar over, we have</p> <p>24 the count of 10. Is that the right read?</p> <p>25 A. That's what it appears to be.</p>
<p style="text-align: right;">Page 91</p> <p>1 MS. THEODORE: Objection to form.</p> <p>2 A. Definitely more are under that. That's</p> <p>3 likely due to the higher turnout in presidential</p> <p>4 election years, in a 2020 contest versus a 2022</p> <p>5 contest. And, so, you know, by including both years,</p> <p>6 both presidential and a midterm, as it were, that's</p> <p>7 going to push that number up, you know, towards 47.</p> <p>8 But in the midterm years, you are going to</p> <p>9 likely need an even higher number than 47% to ensure --</p> <p>10 or to -- yeah, based on this analysis, to ensure a</p> <p>11 black voting age population. But, you know, I wanted</p> <p>12 to provide the overall, kind of -- you have this</p> <p>13 election year, you have that election year, plus our,</p> <p>14 kind of, best guess based on those election years.</p> <p>15 Q. Did you ever run this analysis using</p> <p>16 electoral years 2018 or 2016?</p> <p>17 A. No, I didn't do that. No, I didn't do</p> <p>18 that.</p> <p>19 Q. Why not?</p> <p>20 A. No real reason. It's just 2022 and 2020</p> <p>21 are the most recent years, and so that's why I just</p> <p>22 focused on those.</p> <p>23 Q. Going back to the chart, I want to sort of</p> <p>24 finish the exercise of these bars. So, we've got from</p> <p>25 left to right -- correct me if I'm wrong -- I am</p>	<p style="text-align: right;">Page 93</p> <p>1 Q. And the next bar over, we have the count of</p> <p>2 7. Is that the right read?</p> <p>3 A. That's what it appears to be.</p> <p>4 Q. Okay. The next column over is a count of</p> <p>5 1. Is that the right read?</p> <p>6 A. Looks like it.</p> <p>7 Q. Okay. And, so, the next bar over spans</p> <p>8 from below 50 to 50. Do you see that?</p> <p>9 A. Yes.</p> <p>10 Q. Why does it span? What does that</p> <p>11 represent?</p> <p>12 A. These are just bins of about 2 percentage</p> <p>13 points or so. The program sorts that out. And, so,</p> <p>14 what it would represent is if a -- for example, a --</p> <p>15 the election contest, the simulation shows that the</p> <p>16 BVAP required to elect a black-preferred candidate is,</p> <p>17 say, 49.2, or it's 50.05. That's going to fall in the</p> <p>18 same bin.</p> <p>19 So, that's the range in which that election</p> <p>20 was falling, and that's the pictorial presentation of</p> <p>21 that.</p> <p>22 Q. I see. And, so, roughly, what is the width</p> <p>23 of each bar? Roughly, what range does that width</p> <p>24 represent?</p> <p>25 A. It looks in this plot to be about 2</p>

<p style="text-align: right;">Page 94</p> <p>1 percentage points.</p> <p>2 Q. Okay. So, I am seeing two bars there with</p> <p>3 the value of 1. Is that the right read?</p> <p>4 A. Yes.</p> <p>5 Q. And then, finally, we get over to the</p> <p>6 farthest right column, and it looks to me like it</p> <p>7 represents a count of 6. Is that the right read?</p> <p>8 A. Yes.</p> <p>9 Q. Do you have any sense of which elections</p> <p>10 fall under this count of 6?</p> <p>11 A. I think those are the more recent</p> <p>12 elections. That's my sense. I'd have to doublecheck,</p> <p>13 but I think those are more recent elections.</p> <p>14 Q. So, you mean the 2022 elections?</p> <p>15 A. Yeah, that's my sense.</p> <p>16 Q. What are some reasons why a district drawn</p> <p>17 at below 50% BVAP would elect candidates of choice of</p> <p>18 the black community?</p> <p>19 MS. THEODORE: Objection to form.</p> <p>20 A. There is two general reasons that I can</p> <p>21 think of, sort of off the top of my head. The first</p> <p>22 might be that the black population is -- votes at a</p> <p>23 very high rate and higher than the white population,</p> <p>24 and, so, they are actually representing over 50% of the</p> <p>25 people who actually voted in that context.</p>	<p style="text-align: right;">Page 96</p> <p>1 I am not so interested in looking at some sort of</p> <p>2 sustained long-term pattern of polarization like I do</p> <p>3 in racially polarized voting studies.</p> <p>4 And, so, it is just my typical procedure.</p> <p>5 And I have done this in other cases where I look at</p> <p>6 voter turnout by race. It is not exactly the same type</p> <p>7 of thing, but sort of inline with this, where I look at</p> <p>8 the most, you know, last two elections and just focus</p> <p>9 on those.</p> <p>10 Q. Okay. Did you lack the data to conduct the</p> <p>11 analysis of the 2018 and 2016 elections?</p> <p>12 A. No.</p> <p>13 Q. Did you lack the time to do the analysis?</p> <p>14 A. Well, I understand that it is maybe not so</p> <p>15 much time. I was -- you know, I am very busy putting</p> <p>16 these reports together. I have a lot going on. I</p> <p>17 never want to use time as, sort of, an excuse, but it</p> <p>18 was -- it's sort of a procedure that's conducted after</p> <p>19 I do my, sort of, more typical racially polarized</p> <p>20 voting and electoral performance set of analyses.</p> <p>21 Q. So, what does that mean as a result?</p> <p>22 A. Nothing. Doesn't mean --</p> <p>23 MS. THEODORE: Objection to form.</p> <p>24 A. -- (overspeak) as a result.</p> <p>25 MS. THEODORE: Dr. Collingwood, just let me</p>
<p style="text-align: right;">Page 95</p> <p>1 If there is perfectly racially polarized</p> <p>2 voting, then the black-preferred candidate would</p> <p>3 naturally win. In general, that's an unlikely scenario</p> <p>4 because, typically, the white turnout across the</p> <p>5 country is typically higher than black turnout in terms</p> <p>6 of voting.</p> <p>7 And, so, the more likely, or another</p> <p>8 scenario is, there is, basically, a subset of white</p> <p>9 voters who prefer the black-preferred candidate, i.e.,</p> <p>10 crossover voting. And, so, that -- those are the two</p> <p>11 most likely explanations for why a BVAP district under</p> <p>12 50% would still elect a black-preferred candidate.</p> <p>13 Q. You note on Page 24 that you only look at</p> <p>14 2022 and 2020 to observe changes between presidential</p> <p>15 and midterm years. Do you see that?</p> <p>16 A. Yes.</p> <p>17 Q. I think the analysis only looks at one</p> <p>18 presidential year and one midterm year; is that right?</p> <p>19 A. Yes.</p> <p>20 Q. Why wouldn't you also look at one earlier</p> <p>21 presidential year and one earlier midterm year to add</p> <p>22 to your analysis?</p> <p>23 A. I guess, typically when I do these types of</p> <p>24 analyses, or voter turnout analyses of some sort, I</p> <p>25 tend to focus on the most recent rounds of elections.</p>	<p style="text-align: right;">Page 97</p> <p>1 interject my objection before you answer, if you don't</p> <p>2 mind.</p> <p>3 (Reporter asked for answer repeat).</p> <p>4 A. My answer was, it means nothing.</p> <p>5 Q. Is this analysis hard to do?</p> <p>6 MS. THEODORE: Objection to form.</p> <p>7 A. I would say all of my analyses are hard to</p> <p>8 do. Everything I do is hard to do.</p> <p>9 Q. And you are able to do it for the 2020 and</p> <p>10 2022 elections. You were able to conduct BVAP analysis</p> <p>11 for those two elections, correct?</p> <p>12 A. As you can see in the report, I have done</p> <p>13 those analyses, yes.</p> <p>14 Q. Do you know who Bernard Grofman is?</p> <p>15 A. I do know who he is, yes.</p> <p>16 Q. Have you ever met him?</p> <p>17 A. Yes.</p> <p>18 Q. Who is he?</p> <p>19 A. He is a professor at the University of</p> <p>20 California, Irvine in Political Science.</p> <p>21 Q. And do you know if he has done any work in</p> <p>22 the area of the Voting Rights Act?</p> <p>23 A. He is a well known figure in this area.</p> <p>24 Q. And do you have respect for his</p> <p>25 contribution to Voting Rights Act studies?</p>

<p style="text-align: right;">Page 98</p> <p>1 MS. THEODORE: Objection to form.</p> <p>2 A. He laid a lot of the earlier work in voting</p> <p>3 rights, a lot of that work is -- it was conducted 20,</p> <p>4 30 years ago, but he has made a good contribution.</p> <p>5 Q. And have you ever relied on his work to</p> <p>6 conduct your own work?</p> <p>7 MS. THEODORE: Objection to form.</p> <p>8 A. Well, I certainly read some of his -- some</p> <p>9 of his articles and things like that, and some of his</p> <p>10 books.</p> <p>11 Q. And do you know who Lisa Handley is?</p> <p>12 A. Yes, I know Lisa.</p> <p>13 Q. Okay. Who is she?</p> <p>14 A. She is another expert in racially polarized</p> <p>15 voting.</p> <p>16 Q. Okay. Have you ever met her?</p> <p>17 A. Yes.</p> <p>18 Q. And what kind of work has she done -- in</p> <p>19 your understanding, has she done in the area of Voting</p> <p>20 Rights Act?</p> <p>21 MS. THEODORE: Objection to form.</p> <p>22 A. Well, she has testified as an expert in a</p> <p>23 lot of cases. She has definitely written some articles</p> <p>24 related to racially polarized voting.</p> <p>25 Q. And do you recall ever relying on her work</p>	<p style="text-align: right;">Page 100</p> <p>1 Certainly could be useful.</p> <p>2 Q. Are you aware of any article that they have</p> <p>3 published on the topic of drawing effective districts?</p> <p>4 A. I have a vague sense that they have written</p> <p>5 an article about that, maybe recently. I haven't read</p> <p>6 it, but I have a vague sense, I think. You know, when</p> <p>7 you are in this area, you kind of have a sense as to</p> <p>8 what people may or may not be working on.</p> <p>9 Q. Would it surprise you to know that they</p> <p>10 published an article on drawing effective districts</p> <p>11 that's been cited twice by the Supreme Court and</p> <p>12 multiple times by lower courts?</p> <p>13 MS. THEODORE: Objection to form.</p> <p>14 A. No, that wouldn't surprise me.</p> <p>15 Q. Did you refer to any article written by</p> <p>16 Drs. Grofman, Handley and Lublin in developing your own</p> <p>17 BVAP analysis in this case?</p> <p>18 A. No, I don't think so.</p> <p>19 Q. And did you review any expert report</p> <p>20 prepared by Dr. Handley in recent North Carolina</p> <p>21 litigation in conducting your BVAP analysis in this</p> <p>22 case?</p> <p>23 A. No.</p> <p>24 Q. So, is it fair to say that neither of those</p> <p>25 two sources influenced your preparation of the BVAP</p>
<p style="text-align: right;">Page 99</p> <p>1 to conduct your own racially polarized voting analyses?</p> <p>2 A. Well, she and Grofman, and Richard Niemi,</p> <p>3 N-I-E-M-I, I think wrote a book in 2006 or so. So, you</p> <p>4 know, I am aware of that book and have read some or</p> <p>5 most of it.</p> <p>6 Q. And do you know David Lublin, L-U-B-L-I-N?</p> <p>7 A. Yes, I know David Lublin.</p> <p>8 Q. Have you ever met him?</p> <p>9 A. I have.</p> <p>10 Q. And what do you know about him in the area</p> <p>11 of Voting Rights Act studies?</p> <p>12 A. He has written a couple of articles. They</p> <p>13 might all have an article, a recent article in this</p> <p>14 area. I have to doublecheck.</p> <p>15 He wrote some articles about the 1990 wave</p> <p>16 of redistricting. He wrote those articles, I think, in</p> <p>17 the early 2000s or so. And I think he wrote a book in</p> <p>18 that area, so I think I read that book a while ago.</p> <p>19 Q. And if those three authors published an</p> <p>20 article identifying a method for drawing effective</p> <p>21 districts, would you view that as useful in conducting</p> <p>22 your own work in identifying BVAP necessary to draw</p> <p>23 effective districts?</p> <p>24 MS. THEODORE: Objection to form.</p> <p>25 A. I'd have to read the article, talk to them.</p>	<p style="text-align: right;">Page 101</p> <p>1 analysis in this case?</p> <p>2 A. Yes.</p> <p>3 MS. THEODORE: I don't know if it would be</p> <p>4 a good time to take a break or not. We've been going</p> <p>5 about an hour.</p> <p>6 MS. McKNIGHT: I need a few more minutes</p> <p>7 and then we can take a break.</p> <p>8 MS. THEODORE: Okay.</p> <p>9 BY MS. McKNIGHT:</p> <p>10 Q. Let's bring up Exhibit 3. This is an</p> <p>11 article that we've been discussing and I'd like to look</p> <p>12 at a page and ask you a few questions.</p> <p>13 (Exhibit 3 was marked for</p> <p>14 identification.)</p> <p>15 Q. Do you see it, Dr. Collingwood?</p> <p>16 A. Yes.</p> <p>17 Q. So, this is an article dated June 1, 2001</p> <p>18 titled, Drawing Effective Minority Districts: A</p> <p>19 Conceptual Framework and Some Emperical Evidence". Do</p> <p>20 you see that?</p> <p>21 A. Yes.</p> <p>22 Q. And authors are listed as Bernard Grofman,</p> <p>23 Lisa Handley, and David Lublin. Do you see that?</p> <p>24 A. Yes.</p> <p>25 Q. This is a long article. I have a specific</p>

<p style="text-align: right;">Page 102</p> <p>1 question for you on a chart on Page 1421. If we can, 2 turn to Page 1421. 3 A. Okay. Page 21? 4 Q. Page 1421. So, 1 4 2 1. 5 A. I see. Okay. 6 Q. Do you see on that page a table titled, 7 "Table 10: Percent Black Needed for Black Candidate to 8 Win, Incorporating Cohesion and Crossover: Selected 9 South Carolina State House Contests, 1992 to 1998". Do 10 you see that? 11 A. Yeah. 12 Q. This chart indicates that the analysis 13 relied on four different election years, do you see 14 that? 1992, 1994, 1996 and 1998? 15 MS. THEODORE: I am just going to object to 16 -- I am going to object and direct Dr. Collingwood, 17 since you have never seen this document before -- 18 MS. McKNIGHT: You can't instruct the 19 witness, Counsel. 20 MS. THEODORE: -- you should take the time 21 you need to look at it. 22 A. Okay. Yes, I see -- I see that. 23 Q. Okay. Do you see that the analysis 24 included general elections and primary elections? 25 MS. THEODORE: Objection to form.</p>	<p style="text-align: right;">Page 104</p> <p>1 incorporating voter turnout, RPV estimates, into the 2 functional analysis. I mean, that's what everybody 3 does. 4 And, so, it's -- while I haven't seen this 5 exact report, you know, it is quite likely the 6 methodologies that we're employing are very similar. 7 MS. McKNIGHT: Okay. Those are all my 8 questions for this unit, Elisabeth. If we want to take 9 a break now, it is 3:10 . . . 10 - - - - - 11 (Off the record.) 12 - - - - - 12 BY MS. McKNIGHT: 13 Q. Dr. Collingwood, before the break do you 14 recall that we were just looking at Page 1421 in the 15 article titled, Drawing Effective Minority Districts? 16 A. Yes. 17 Q. Could we bring up Exhibit 5.? This should 18 be in the exhibit portal. Let me know when you see it 19 and are ready to testify. 20 A. Okay. 21 (Exhibit 5 was marked for 22 identification.) 23 Q. I see this as being an article titled, Can 24 States Promote Minority Representation? Assessing the 25 Effects of the California Voting Rights Act. Do you</p>
<p style="text-align: right;">Page 103</p> <p>1 A. I see that those are both in the table. 2 Q. Okay. We can take that down and we can 3 bring up what should be marked as Exhibit 4. This is a 4 September 17, 2019 report. This should be marked as 5 Exhibit 4. 6 (Exhibit 4 was marked for 7 identification.) 8 A. Okay. 9 Q. And this is titled, Providing Black Voters 10 with an Opportunity to Elect Candidate of Choice to the 11 North Carolina State Legislature: A 12 Jurisdiction-Specific Functional Analysis of Select 13 House and Senate County Grouping". Do you see that? 14 A. Yes. 15 Q. And it is written by Dr. Lisa Handley and 16 dated September 17, 2019. Do you see that? 17 A. Yes. 18 Q. Have you ever reviewed this report? 19 A. No. 20 Q. Is it fair to say you didn't consider the 21 methodology of this report when preparing your own 22 report in this matter? 23 A. Well, the methodology could be the same. I 24 mean, it is my understanding that these scholars are 25 using a very similar type of approach in terms of</p>	<p style="text-align: right;">Page 105</p> <p>1 see that? 2 A. Yes. 3 Q. I see you listed as the first author on 4 this article; is that fair to say? 5 A. Yes. 6 Q. Okay. This article appears to be dated 7 2021. Do you remember writing it? 8 A. Yes. 9 Q. Okay. Let's turn to Page 761 of this 10 article in the section called, References. 11 A. Yes, I see. 12 Q. Okay. And do you see the fourth reference 13 down on this list of references? 14 A. Yes. 15 Q. Does that appear to be the article we were 16 just discussing, Drawing Effective Minority Districts? 17 A. Looks like it. 18 Q. And I see a range of pages cited at the end 19 of it. Do you see that? 20 A. Yes. 21 Q. Okay. And by my read, that range of pages 22 includes the Page 1421 that we were just discussing 23 before the break. Is that a correct read? 24 A. Yeah, I think so. 25 Q. So, is it correct to say you have never</p>

27 (Pages 102 - 105)

<p style="text-align: right;">Page 106</p> <p>1 seen this article, Drawing Effective Minority 2 Districts, before? 3 A. I mean, when I made that statement, it 4 sounded -- I don't recall seeing it. It's possible 5 that I came across it while I was writing this article, 6 and if I remember correctly, I think Sean, my coauthor, 7 was doing the body of that type of data, or literature 8 review. 9 So, if I had seen it, I would have mostly 10 glanced at it, but not given it a full read. 11 Q. And would you include an article as a 12 reference if you didn't consider it informative in the 13 preparation of this article? 14 MS. THEODORE: Objection to form. 15 A. I mean, when you write articles, you -- you 16 know, one or both authors read them in whole or part 17 and you are sort of familiar with the article. You 18 don't necessarily always read the full article, and you 19 might focus specifically on one aspect of the article. 20 You might focus specifically on the abstract, or 21 another spec of analysis. 22 So, you know, we -- you know, we, 23 obviously, found the articles somewhat helpful in some 24 argument that we were making, or citing something on, 25 so that's why it is in there.</p>	<p style="text-align: right;">Page 108</p> <p>1 Q. Do you recall when you were asked to look 2 at this error margin issue? 3 A. This was, I think, right when we got the 4 report back, the defense expert reports, and counsel 5 asked me to do an analysis of the margin of error on 6 the various demonstrative plans. 7 Q. Would that be, roughly, August? 8 A. Sometime in August. 9 Q. What is ACS data? 10 A. That's short for American Community Survey. 11 It is a survey of households across the United States 12 every year that ask a lot of questions, and it is part 13 of the U.S. Census product. 14 Q. And is it -- does the ACS provide a 15 five-year estimate? 16 A. It does. 17 Q. And when -- does it provide a five-year 18 estimate including 2022 data? 19 MS. THEODORE: Objection to form. 20 A. That is available, yes. 21 Q. Do you know when the 2022 ACS data became 22 available? 23 A. Sometime in the first part of 2024, I 24 think. 25 Q. By part, do you mean, like, first half or</p>
<p style="text-align: right;">Page 107</p> <p>1 Q. Okay. Let's move on. I'd like to look at 2 your reply report, or rebuttal report submitted in this 3 case. So, this will be loaded as Exhibit 6. Just let 4 me know when you have it, Dr. Collingwood. 5 A. Okay. 6 (Exhibit 6 was marked for 7 identification.) 8 Q. Now, is this -- does Exhibit 6 reflect a 9 true and accurate copy of the report you submitted in 10 this matter titled, Expert Rebuttal Report of Dr. Loren 11 Collingwood, on August 30, 2024? 12 A. Looks correct. 13 MS. McKNIGHT: Okay. I'm sorry. Could you 14 hold on just one moment? 15 - - - - - 16 (Off the record.) 17 - - - - - 18 BY MS. McKNIGHT: 19 Q. Were you able to answer my question, 20 Dr. Collingwood, whether this is a true and accurate 21 copy of your rebuttal report submitted in this matter? 22 A. Yes, it looks like it is. 23 Q. I'd like to ask you some questions about 24 the issue referred to as the margin of error issue that 25 you discussed in this report. 26 A. Okay.</p>	<p style="text-align: right;">Page 109</p> <p>1 first quarter? 2 A. Probably first quarter. 3 Q. So, by that, you mean between January and 4 March of 2024? 5 A. Yes. 6 Q. Do you know a Dr. Oskooii who has submitted 7 expert reports in other VRA cases? 8 A. Yes. 9 Q. Have you spoken to Dr. Oskooii about any 10 litigation? 11 A. Well, we were experts in the Washington 12 redistricting case, so we had spoken about that and 13 possible older cases that we have worked on, or that he 14 has worked on, that I have worked on once they've been 15 finished. 16 Q. Okay. Have you ever discussed any 17 litigation in Alabama with Dr. Oskooii? 18 A. Not directly. I am aware that he maybe 19 worked, or is working on that case, but we haven't 20 spoken about it in any detail. 21 Q. Okay. Do you know if the issue of error 22 margin related to the ACS is coming up in other pieces 23 of the area of litigation? 24 MS. THEODORE: Objection to form. 25 A. It seems like this is a new tact and</p>

<p style="text-align: right;">Page 110</p> <p>1 strategy that defense experts are somewhat recently 2 starting to use.</p> <p>3 Q. Can you describe the tact or strategy, as 4 you said?</p> <p>5 A. Basically, to attach a margin of error to 6 the CVAP estimate for the minority population to show 7 that districts that are drawn close to 50%, or so, are 8 potentially not actually 50% and, so, therefore, 9 Gingles I is not met. So, I think that's the general 10 strategy.</p> <p>11 Q. Would you agree with me that there is a 12 margin of error on CVAP?</p> <p>13 MS. THEODORE: Objection to form.</p> <p>14 A. CVAP has -- is a sample survey and, so, as 15 a result, yes, there is a margin of error.</p> <p>16 Q. Is the error of margin for CVAP estimates 17 calculated for block groups or electoral districts?</p> <p>18 MS. THEODORE: Objection to form.</p> <p>19 A. Both.</p> <p>20 Q. Okay. So, it's your view that a CVAP error 21 of margin is calculated for electoral districts?</p> <p>22 MS. THEODORE: Objection to form.</p> <p>23 MS. McKNIGHT: Could I have counsel state 24 the basis of her form objection?</p> <p>25 MS. THEODORE: I mean, I think the question</p>	<p style="text-align: right;">Page 112</p> <p>1 Q. Does Tidy Census sound right to you?</p> <p>2 A. Well, that is a -- that wasn't what I was 3 specifically referring to, but that is something that 4 you could use.</p> <p>5 Q. Were you referring to something within the 6 census.gov website?</p> <p>7 A. Correct.</p> <p>8 Q. Are you familiar with something called, 9 disaggregation of split block groups?</p> <p>10 A. Probably.</p> <p>11 Q. And what is the familiarity? What is your 12 understanding?</p> <p>13 A. Well, if you have a block group that a 14 district splits, that the boundaries of a district 15 splits, you could disaggregate the block group estimate 16 to the block level, and the blocks would be fully 17 encompassed within one side of the district or the 18 other. So, that's how you would do that.</p> <p>19 Q. And how do you -- or how does the census 20 disaggregate -- let me ask you this: Who does the 21 disaggregation down to the block level? Is it you, the 22 census, or someone else?</p> <p>23 A. No, the census wouldn't do that, at least I 24 have not seen that. I could do it using various -- a 25 code base that I use and that other experts might use.</p>
<p style="text-align: right;">Page 111</p> <p>1 was very unclear about who you are talking about is 2 doing the calculating, whether you are talking about it 3 when the census bureau presents these results, various 4 other lack of clarities with respect to the form of the 5 question.</p> <p>6 MS. McKNIGHT: Thank you.</p> <p>7 BY MS. McKNIGHT:</p> <p>8 Q. You can answer, Dr. Collingwood.</p> <p>9 A. It is -- well, it is not my opinion. The 10 data are publicly available at both the block group and 11 enacted legislative districts.</p> <p>12 Q. And how are the data available at the 13 enacted legislative district level?</p> <p>14 A. How are they available? They are on a 15 website that -- a census website, and you can download 16 that data and look at the margins of error, and the 17 estimates for different legislative districts across 18 the state, and various population count, and other 19 things like that. So, it is just publicly available 20 from the U.S. Census.</p> <p>21 Q. When you say, census website, which website 22 are you referring to?</p> <p>23 A. I would have to look. I would have to 24 look. It's fairly -- you know, fairly easy with some 25 Googling to sort that out.</p>	<p style="text-align: right;">Page 113</p> <p>1 And you, more or less, figure out what the -- because 2 blocks are nestled within block groups, you can, say, 3 for example, take the overall population of the block 4 group, or any estimates from racial estimate, and 5 basically split it across the -- down to the blocks, 6 weighting the data by some population count at the 7 block level.</p> <p>8 Or, what I think is more common, is to use 9 Redistricting Data Hub, disaggregated data, because I 10 spend a lot of time doing it; and, so, the method is 11 very similar to how a single expert might use it. But 12 it's a bit of an arduous process. So, it is easier in 13 these cases to rely on Redistricting Data Hub data 14 that's been dropped down to the block level.</p> <p>15 Q. Did you rely on the Redistricting Data Hub 16 data in this case?</p> <p>17 A. Yes, I typically rely on redistricting 18 data. That's one of the first places I go for any case 19 that I work on.</p> <p>20 Q. And do you know how the Redistricting Data 21 Hub codes the disaggregation decision about how many 22 people to disaggregate into each block group -- into 23 each block?</p> <p>24 A. Could you rephrase the question?</p> <p>25 Q. Sure. We were just discussing</p>

<p style="text-align: right;">Page 114</p> <p>1 disaggregation from block group down to block level, 2 and I understood you to say that Redistricting Data Hub 3 conducts its own disaggregation so that you, the 4 individual statistician, don't have to go through that 5 arduous exercise. And I my question was -- and I 6 understood that you relied on the Redistricting Data 7 Hub in this case.</p> <p>8 And my question was, what is your 9 understanding of how Redistricting Data Hub conducts 10 the process of disaggregation from a block group to a 11 block level when there has been a split?</p> <p>12 A. Right. So, it would be the same general 13 process that I discussed previously. And they have, 14 and probably you have looked at it, like, a README file 15 about what they do. And, so, they are going to take 16 block group data estimates and they are going to 17 allocate those estimates down to the block based on 18 some sort of weight, which is density of voting age 19 population over population. And, so, that will then 20 get you an estimate of individuals with a different, 21 say, racial categories down to the block level.</p> <p>22 Q. Are you familiar with the term, failure 23 rate?</p> <p>24 A. I would have to know more context about 25 what specifically you mean in terms of a failure rate.</p>	<p style="text-align: right;">Page 116</p> <p>1 way to calculate a rate or a percentage of accuracy of 2 the disaggregation process?</p> <p>3 MS. THEODORE: Objection to form.</p> <p>4 A. I haven't done that specifically, so I 5 can't speak on that.</p> <p>6 Q. Would you agree with me that we do not know 7 the actual number of CVAP in any given block group?</p> <p>8 MS. THEODORE: Objection to form.</p> <p>9 A. Well, because this is a sample survey, it 10 is always going to be an estimate, but -- yeah, so it 11 is still going to be an estimate of the actual black 12 CVAP or any white CVAP, or any sort of CVAP. It is 13 still going to be an estimate.</p> <p>14 Q. Are you familiar with the census term, 15 differential privacy?</p> <p>16 A. Yeah, somewhat familiar with that.</p> <p>17 Q. What is your understanding of it?</p> <p>18 A. I think it is really to do with areas where 19 there is not a lot of population and, so, the -- either 20 the data at that level are not publicly available, or 21 they're jittered somehow. There has been some work in 22 that. I haven't spent a lot of time focused on that, 23 though.</p> <p>24 Q. Pardon me, I didn't hear the word you used, 25 jittered or jiggered?</p>
<p style="text-align: right;">Page 115</p> <p>1 Q. Okay. I am trying to understand if you can 2 have an understanding of failure rate for the 3 disaggregation of split block groups, whether that is a 4 knowable figure.</p> <p>5 A. I don't understand what you mean by failure 6 rate.</p> <p>7 Q. Okay. Let me ask it a different way. Are 8 you able to get a sense of how accurate the block level 9 disaggregation exercise is?</p> <p>10 A. Well, let me just first say, while I have 11 relied on Redistricting Data Hub data here, it is, I 12 think, the data that Sean Trende, your expert, had, you 13 know, downloaded for this specific type of question. 14 So, let me just say that, in terms of getting the 15 failure rate, or how reliable it might be, one way to 16 do that might be to see what the overall population 17 count are at the block level compared to the block 18 group level, and various demographic percentages, 19 whether areas that are high black population, or also 20 high black citizen voting population.</p> <p>21 So, that's the general process as to how, 22 at least, thinkings or -- off the top of my head, how 23 one might go about validating these types of 24 disaggregations.</p> <p>25 Q. As you sit here today, are you aware of any</p>	<p style="text-align: right;">Page 117</p> <p>1 A. Jittered. It's sort of adding a little bit 2 of noise, or something, to protect individuals. But, 3 you know, this is not my area of expertise, per se, in 4 terms of differential privacy. I haven't written any 5 papers about it so I could be a little off.</p> <p>6 Q. Would you agree with me that we cannot know 7 precisely where citizens live or don't live based on 8 the Census Bureau CVAP figures?</p> <p>9 A. Not really. We are going to have a pretty 10 good read. I mean, we don't -- we have a block -- even 11 a block using census data, you typically don't have, 12 using these data, or at least, you don't know exactly 13 where any individual lives. And, so, we still kind of 14 know, like, the general areas and what things look 15 like.</p> <p>16 So, I wouldn't say we don't know where they 17 live. I mean, we have pretty good, you know, estimates 18 as to where people live.</p> <p>19 Q. And pardon for me to asking again, because 20 I think I missed a word in my question, which is: We 21 cannot know precisely where citizens lived based on 22 CVAP data from the census, isn't that right?</p> <p>23 A. Well, we never know where anyone lives 24 based on the census or ACS data, any individual 25 household. We don't receive geocoded information about</p>


<p style="text-align: right;">Page 118</p> <p>1 where people are living. That data is not publicly 2 available.</p> <p>3 Q. But is that other census study you just 4 described jittered, like the census district data is 5 jittered, according to your words?</p> <p>6 A. In terms of differential privacy, it may 7 be. I am not exactly sure. It may be.</p> <p>8 Q. Which of that data might be jittered based 9 on differential privacy rules?</p> <p>10 MS. THEODORE: Objection to form.</p> <p>11 A. I just -- I don't know which -- like I 12 said, I don't know for sure, and, so, I don't know.</p> <p>13 Q. So, is it your testimony that it just might 14 be altered, or noise might be added to some other data, 15 based on differential privacy rules?</p> <p>16 MS. THEODORE: Objection to form.</p> <p>17 A. Is it my testimony? My testimony is that 18 jittering, or differential privacy, may not only occur 19 in the ACS. It may also occur in the census, Decennial 20 Census, but I don't know for sure.</p> <p>21 Q. Does Decennial Census provide CVAP data?</p> <p>22 A. The Decennial Census does not provide CVAP 23 data, at least not anymore.</p> <p>24 Q. So, when we are talking about differential 25 privacy rules and how they effect CVAP data, we are</p>	<p style="text-align: right;">Page 120</p> <p>1 Q. What does the three statistical uncertainty 2 mean to you?</p> <p>3 A. It's just the area around a point estimate 4 that the true answer could potentially be given the 5 data, the model, the approach that you are using to 6 estimate some sort of number.</p> <p>7 Q. Do you consider yourself a statistician, 8 Dr. Collingwood?</p> <p>9 A. My Ph.D. is in political science, but I 10 focused a lot on applied statistics.</p> <p>11 Q. And in the study of statistics, are you 12 supposed to ignore uncertainty when it presents itself, 13 or do you consider it?</p> <p>14 MS. THEODORE: Objection to form.</p> <p>15 A. I think in -- in statistics in social 16 science, you don't always have some sort of uncertainty 17 available to you. You might be looking at trends, you 18 might be looking at point estimate trends across time, 19 and/or those may or may not come with some sort of 20 measures of statistical uncertainty. So, there are 21 times when it makes sense to include it, other times, 22 depending on the case, it may be, getting statistical 23 uncertainty is difficult in terms of getting a reliable 24 measure of the uncertainty itself, or there hasn't been 25 a measure that is set up to do that yet.</p>
<p style="text-align: right;">Page 119</p> <p>1 only talking about ACS and not Decennial Census data; 2 is that fair to say?</p> <p>3 A. If we are talking about CVAP data, we are 4 almost always talking about ACS, not Decennial Census.</p> <p>5 Q. I'd like to step back. I'd like to ask you 6 about statistical uncertainty. Are there times when 7 statistics cannot answer a question that's posed with a 8 reliable degree of certainty?</p> <p>9 A. I'm not totally clear the question you are 10 asking. Maybe you could rephrase it?</p> <p>11 Q. What's unclear to you?</p> <p>12 A. Where statistics cannot answer. The answer 13 could be that there is no answer and so -- or, the 14 answer is not what you wanted it to be, and statistics 15 will tell you that your data are not telling you 16 whether there is or isn't an answer.</p> <p>17 Q. So --</p> <p>18 A. So, that's kind of just unclear to me. 19 That's what's unclear to me.</p> <p>20 Q. I see. So, would that be a case where you 21 don't have a reliable degree of certainty on the 22 answer?</p> <p>23 MS. THEODORE: Objection to form.</p> <p>24 A. That could be. It could be that type of 25 situation, yes.</p>	<p style="text-align: right;">Page 121</p> <p>1 Or, if you go to do the analysis, you know 2 that you are still -- even your uncertainty estimate is 3 going to be uncertain. And, so, that's that sort of 4 the joy in statistics, I suppose, in doing this kind of 5 work is, you know, it really is a case-by-case 6 situation.</p> <p>7 Q. What is the confidence interval?</p> <p>8 A. A confidence interval is the typical range 9 that -- in classical statistics at least -- where the 10 true answer of the point estimate of the sample, the 11 true answer would fall if you did that same sampling 12 procedure, you know, a certain number of times. And, 13 so, the confidence interval is a typical estimate of 14 our uncertainty, given the data and given the model.</p> <p>15 Q. Are you familiar with something that's 16 called an ACS Handbook?</p> <p>17 A. Yes.</p> <p>18 Q. And have you ever referred to the ACS 19 Handbook for information during your work in conducting 20 racially polarized voting analysis?</p> <p>21 A. In conducting racially polarized voting 22 analysis, I don't think so. I may have, but I don't 23 think so, in terms of conducting racially polarized 24 voting analysis. But I can't say for sure.</p> <p>25 Q. Okay. Do you ever refer to the ACS</p>

<p style="text-align: right;">Page 122</p> <p>1 handbook in conducting any of the analysis that you do, 2 either in your academic or litigation work? 3 A. Well, I refer to the ACS handbook and the 4 margin of error calculations, et cetera, in this 5 report, and I am sure I would have referred to it in 6 some of my publications, but I can't say for sure. 7 Q. And does the ACS handbook say anything 8 about the preferred method for calculating margin of 9 error? 10 A. A preferred method? It just tells you if 11 you are, for example, calculating a summation across 12 variables, here is the formula. If you are conducting 13 an aggregation across geographic units, here's your 14 formula. So, it gives you that information in the ACS 15 handbook. 16 Q. Does Dr. Trende calculate margin of error 17 using data reported at the block level? 18 A. Not for -- my understanding is not for 19 CVAP, no. 20 Q. What is your understanding of what he did 21 for CVAP? 22 A. He calculated margins of error using block 23 group data for the illustrative or demonstrative 24 districts produced by Mr. -- I forget -- Esopin? 25 Q. Esselstyn.</p>	<p style="text-align: right;">Page 124</p> <p>1 Q. Okay. Do you know when this function in 2 Tidy Census became available for use? 3 A. I do not. 4 Q. Do you recall when you became aware of that 5 function in Tidy Census? 6 A. No, I do not. 7 Q. Do you know if you knew about it at the 8 beginning of this year? 9 A. Maybe. I really can't recall if I was 10 using it before then or started using it this year. 11 Q. We were discussing the census website 12 earlier. Are you able to calculate -- does the census 13 website provide any sort of tool to calculate MOE 14 automatically in this way? 15 A. It may. I didn't use it so I don't know 16 for sure. It may. 17 Q. Would you agree with me that the margin of 18 error is an estimate and not a known set and number? 19 MS. THEODORE: Objection to form. 20 A. Well, it is directly calculable if you have 21 all of the underlying data and the right units. Given 22 the data, you will always calculate the exact same 23 margin of error. So -- you know, that's what I would 24 say. It's given the data, and this is the data that we 25 have, you would always calculate the exact same margin</p>
<p style="text-align: right;">Page 123</p> <p>1 A. Eseltine, yeah. 2 Q. Esselstyn, sorry. 3 A. Yeah, it is a tough one for me. 4 MS. THEODORE: It's actually, Esselstyn. 5 Q. Okay. So, Dr. Trende calculated the MOE 6 using data reported at the block group level. Is that 7 what you testified? 8 A. Yes, that's my understanding. 9 Q. And is it fair to describe how you 10 calculated margin of error as being calculated at the 11 county level? 12 A. No, I did -- I did block group. I did 13 counties. I did state senate district enacted, and I 14 did county combined with block group for illustrative 15 plans. 16 Q. We touched on this earlier, but are you 17 familiar with the software package called, Tidy Census? 18 A. Yes. 19 Q. Do you have an understanding of whether the 20 Tidy Census calculates margin of error automatically? 21 A. Automatically? It is not just 22 automatically, but you can provide data or function -- 23 not data -- data or existing estimates into various 24 functions of Tidy Census and it will calculate these 25 numbers that you are trying to estimate.</p>	<p style="text-align: right;">Page 125</p> <p>1 of error if you are looking at the exact same units, or 2 the exact same jurisdiction. 3 Q. And, so, you mentioned it is directly 4 calculable with the underlying data. If the underlying 5 data is an estimate, therefore, is the margin of error 6 also an estimate? 7 MS. THEODORE: Objection to form. 8 A. Well, I would -- I would have to look at 9 this a little bit more directly. I guess I can imagine 10 a scenario, if the underlying data changed, then the 11 margin of error would change, but the formula would be 12 exactly the same. But I suppose the actual estimate 13 itself could go up or down if the underlying data 14 changes. 15 Q. We have been discussing a margin of error 16 for block groups. I wanted to ask you if you are able 17 to calculate a margin of error for a district, 18 essentially, adding up the margins of error or 19 calculating them in some way from all the block groups 20 into the district itself? 21 MS. THEODORE: Objection to form. 22 A. Well, you -- you -- that is -- that's 23 theoretically possible. Yes, you can do that. 24 Q. And would that be an estimate for the error 25 of margin in the district?</p>

<p style="text-align: right;">Page 126</p> <p>1 A. Yes.</p> <p>2 Q. And how would you do that?</p> <p>3 A. Well, you would take that CVAP block group</p> <p>4 data and you would, essentially, apply the margin of</p> <p>5 error formula to all of that data, and -- you know,</p> <p>6 that would provide you with an estimate as to the range</p> <p>7 for different estimates that are already there. So,</p> <p>8 for a range of point estimates, it will provide you the</p> <p>9 error estimates for those point estimates.</p> <p>10 Q. What do you mean by the margin of error</p> <p>11 formula?</p> <p>12 A. Well, depends on the different -- what you</p> <p>13 are trying to do. So, the block group data would come</p> <p>14 with a margin of error attached that's numeric. And,</p> <p>15 so, if there is a population count, they will give you</p> <p>16 a margin of error based on population count.</p> <p>17 In this case, we might be interested in the</p> <p>18 proportion of, say, black people of total people in the</p> <p>19 district. And, so, the -- there is a specific</p> <p>20 proportion margin of error that you would need to use</p> <p>21 in order to estimate the margin of error as a</p> <p>22 proportion, as opposed to just a raw count.</p> <p>23 Q. Like a proportion of the district? Meaning</p> <p>24 a --</p> <p>25 A. A proportion of, say, all individuals in</p>	<p style="text-align: right;">Page 128</p> <p>1 A. Yes.</p> <p>2 Q. Which ones?</p> <p>3 A. I think I did it for all of the enacted</p> <p>4 districts. I did it for illustrative District B1 and</p> <p>5 D1, and illustrative District E.</p> <p>6 Q. And did you report those findings in your</p> <p>7 rebuttal report?</p> <p>8 A. Yes.</p> <p>9 Q. Okay. Can you show me where in your</p> <p>10 rebuttal report you reported those results?</p> <p>11 A. So, for all of the enacted senate</p> <p>12 districts, Page 18 has a proportion margin of error for</p> <p>13 percent black, and then --</p> <p>14 Q. Can we start -- sorry. Can I ask questions</p> <p>15 and then we can go to the next one?</p> <p>16 The P_MOE column, how was that calculated?</p> <p>17 A. How is that calculated? It is calculated</p> <p>18 -- first, you would take the three individual racial</p> <p>19 categories for each district. So, there are three</p> <p>20 different black categories in the CVAP data. We have</p> <p>21 to sum them together, both for the B-CVAP and the total</p> <p>22 CVAP, and then each one of those has a separate margin</p> <p>23 of error, raw number.</p> <p>24 And, so, we effectively need to sum those</p> <p>25 together using the MOE sum function from the Tidy</p>
<p style="text-align: right;">Page 127</p> <p>1 the districts that are black.</p> <p>2 Q. And the proportion of those members in the</p> <p>3 district who are black, who are in that block group</p> <p>4 level that you have the MOE for, is that what you mean?</p> <p>5 MS. THEODORE: Objection to form.</p> <p>6 A. Of the overall district.</p> <p>7 Q. Okay. I am just missing something. Sorry,</p> <p>8 Dr. Collingwood. So, when you are talking about a</p> <p>9 proportion, you are looking at a proportion of black</p> <p>10 voters in a block group as compared to the overall</p> <p>11 districts?</p> <p>12 A. No, you are looking -- the goal is to use</p> <p>13 the block group data to estimate the margin of error</p> <p>14 for the proportion of black citizen voting age</p> <p>15 population. So, that's the goal. And you will use the</p> <p>16 underlying count data on the number of black</p> <p>17 individuals or white individuals in each block group.</p> <p>18 And you will use that to create an overall</p> <p>19 share of the black citizen voting age population, as</p> <p>20 well as a proportion estimate as to the margin of</p> <p>21 error. So, it could be plus or minus five percentage</p> <p>22 points, could be plus or minus one percentage point.</p> <p>23 That's what I'm talking about.</p> <p>24 Q. Did you calculate any estimate for the</p> <p>25 error of margin in any districts in this case?</p>	<p style="text-align: right;">Page 129</p> <p>1 Census. And, so, once you have that number, you then</p> <p>2 apply the proportions formula, which is enunciated in</p> <p>3 my report, and is enunciated in the ACS handbook. And,</p> <p>4 so, that's how those are calculated and effectively how</p> <p>5 all of them are calculated.</p> <p>6 But the senate districts are -- they come</p> <p>7 with numeric margins of error directly.</p> <p>8 Q. I missed that. Is that the column,</p> <p>9 CVAPMOE?</p> <p>10 A. That's correct. So, the CVAPMOE, for</p> <p>11 example, for Senate District 1, Enacted Senate District</p> <p>12 1, that's the margin of error on the total CVAP</p> <p>13 population. The BCVAP is a combination of the three</p> <p>14 black categories. That's the estimate of everyone who</p> <p>15 is, basically, any part black.</p> <p>16 And then the CVAPMOE is an estimate of the</p> <p>17 MOE introducing those three different, you know, racial</p> <p>18 categories that can get combined into the one category</p> <p>19 for the purpose of estimating any part black.</p> <p>20 Q. So, column CVAP MOE for Senate District 1,</p> <p>21 for example, that figure, 524, is that derived by</p> <p>22 adding up the MOE for all of the block -- the blocks</p> <p>23 within Senate District 1?</p> <p>24 A. No, it's not.</p> <p>25 Q. Okay. How do you get that figure?</p>

<p style="text-align: right;">Page 130</p> <p>1 A. That data is provided to us from the 2 census, or the AC -- the census product from the 3 American Community Survey at the state senate level, 4 you know, that they have created those numbers. And, 5 so, we can estimate the MOE by taking the square root. 6 So, there are three different -- there are three 7 different black categories, and we can take the square 8 root of the squared -- the squared sum of those three 9 categories, and that will produce that number. 10 And, so, that's how you get that number. 11 Q. That will produce which number? 12 A. The BCVP MOE number. 13 Q. I see. Okay. So, I am looking at the 14 CVAPMOE number, and you said that it was provided by 15 the ACS at the state district level. Did I hear that 16 right? 17 A. Correct. 18 Q. Okay. And so, you know, I am trying to 19 understand where the -- bridge the gap between -- ACS 20 produces data at a block level, and you can aggregate 21 it up to block group and higher and higher. And then 22 the state itself has a redistricting plan that draws 23 out Senate District 1, Senate District 2, and so forth. 24 How does the information from the block 25 level from the ACS get calculated so that you can have</p>	<p style="text-align: right;">Page 132</p> <p>1 District 1, and they have, presumably, all of the 2 underlying data to generate these numbers besides just 3 block groups or blocks, or whatever. They actually 4 have a full sample of individuals in that district that 5 took their surveys for their households across time. 6 And, so, they can provide extremely 7 reliable and precise estimates for, you know, these 8 different units for the senate districts. 9 Q. So, pardon me, I don't -- I really don't 10 mean to be dense. I am trying understand why -- I just 11 can't believe that the Census Bureau has every single 12 senate district programmed into its computer from every 13 different state, and that's what it sounds like you are 14 describing, that the census provides you this data 15 already packaged for Senate District 1. 16 And, so, I am trying to understand how does 17 it get-- how does this data get packaged into Senate 18 District 1 to create that figure 524? I think that 19 happens outside the Census Bureau. 20 A. So, you are saying figure 524? Oh, that 21 number? 22 Q. Yeah. 23 A. I don't actually know the process that the 24 census or the ACS is going through in order to make 25 their calculations, right. I would have to interview</p>
<p style="text-align: right;">Page 131</p> <p>1 a CVAP MOE of 524? How did you get that number? 2 MS. THEODORE: Objection to form. 3 A. That is -- this number is presented and 4 given to us from the census. You know, the census 5 website and the ACS provide these data to us. So, 6 however they -- 7 Q. And -- 8 A. Sorry. What? 9 Q. I don't -- go ahead, please. 10 A. So, however they provide that, that's just 11 given to us. We have that data publicly available to 12 us so we start from there. 13 Q. And does the census -- if I go on the 14 census website, can I locate Senate District 1 on the 15 census website? 16 A. You can download this full dataset here 17 that I have in terms of the total CVAP, the CVAP MOE, 18 and then you would have to combine the black categories 19 to get these figures that I have. 20 Q. Right. And, so, for CVAP MOE, that would 21 be downloaded from the site in some other format, 22 either at some different level or format, and you would 23 add it up into Senate District 1; is that right? 24 A. It provides data to me directly in Senate 25 District 1. The estimates are for the full Senate</p>	<p style="text-align: right;">Page 133</p> <p>1 them, or they would have to tell me and -- you know, I 2 guess it is possible it is in some documentation 3 somewhere, right. So, it's certainly publicly 4 available. 5 But they provide -- the census provides 6 these kinds of estimates for every geographic 7 jurisdiction at the block group or higher within a 8 certain range. They provide it for county, they will 9 provide it for legislative district. And, so, that's 10 just publicly available. And they provide that 11 information to the public, just like they provide block 12 group data to the public. 13 Q. Great. Thank you. Okay. I interrupted 14 you when you were walking through where in your report 15 you have estimated MOE for different districts. So, 16 you identified Rebuttal Table 5. Were there other 17 tables where you conducted this analysis? 18 A. Okay. So, then on Page 15, I provide the 19 estimated margin of error for the county block group 20 analysis that I did for B1, and then, also, D1 is 21 provided there in terms of the text. And then I 22 provide a variety of other analyses in terms of earlier 23 maps looking at block groups on Page, I think, 11. 24 Q. Great. Okay. Thank you. 25 A. And also Page 10.</p>

<p style="text-align: right;">Page 134</p> <p>1 MS. McKNIGHT: I think we are at a good 2 breaking point. I may have just one sort of unit of 3 questions left. So, if you don't mind, let's take a 4 15-minute break. 5 - - - - - 6 (Off the record). 7 - - - - - 8 BY MS. McKNIGHT: 9 Q. Dr. Collingwood, earlier in the deposition 10 I asked you questions about what documents and 11 information you reviewed in order to support your 12 reports in this matter. Having reviewed your rebuttal 13 report recently, is there any other data or information 14 you'd like to add to that list? For example, did you 15 review ACS data? 16 A. Oh, yeah, yeah, definitely. Let me see 17 here. Yeah. So, I used and looked at the 2022 ACS 18 data and -- but I think I say -- I rely upon the 19 production in the original analysis and associated data 20 production as well as Drs. Alford and Trende's reports 21 and associated data production. And, so, they do -- 22 or, Dr. Trende doesn't include CVAP data in that 23 production. 24 Q. Okay. Do you recall serving as an expert 25 witness in a case titled, Palmer versus Hobbs, challenging legislature districts in Washington?</p>	<p style="text-align: right;">Page 136</p> <p>1 non-Hispanic white alone, and Hispanic, and several 2 other minority groups". Did I read that correctly? 3 A. Yes. 4 Q. Does that mean that you disaggregated the 5 2022 ACS data from the block group level to the 6 individual block level? 7 A. In this case, what I did is -- I didn't do 8 that specific operation. I took all of the block 9 groups, and then any block groups that were split were 10 disaggregated. 11 Q. And did you conduct that disaggregation? 12 A. Yes. 13 Q. Did you do it yourself, or did you rely on 14 some sort of software package to help you? 15 A. Well, everything I do I rely on a software 16 package, typically, R, which is a statistical program. 17 Q. Okay. And you did this work prior to 18 February 23, 2024; is that fair to say? 19 A. I sure hope so. 20 Q. Okay. Let's bring up Exhibit 8. Let me 21 know when you are ready to testify. 22 A. Okay. I'm ready. 23 (Exhibit 8 was marked for 24 identification.) 25 Q. Okay. Do you recognize this document?</p>
<p style="text-align: right;">Page 135</p> <p>1 A. Yes. 2 Q. Okay. Let's bring up Exhibit 7, and let me 3 know when you have it and you can begin to testify. 4 A. Okay. I see. 5 (Exhibit 7 was marked for 6 identification.) 7 Q. Do you recognize this document? 8 A. I do. 9 Q. What is it? 10 A. This is my -- apparently, very brief expert 11 report in the remedial phase of this Palmer v Hobbs 12 case. 13 Q. And is it dated February 23, 2024? 14 A. Yes. 15 Q. And do you recall authoring this report? 16 A. I do. 17 Q. I am looking at the second paragraph under 18 Executive Summary. Do you see where it says, "I used 19 the recently released 2022 CVAP block group data taken 20 from the U.S. Census". Do you see that? 21 A. I do. 22 Q. It says, "I filter the block groups to 23 those appearing in each respective map, i.e., LD-15 in 24 the enacted plan, or LD-14 in the alternative plans, 25 then sum the total counts for total population,</p>	<p style="text-align: right;">Page 137</p> <p>1 A. I do. 2 Q. What is it? 3 A. This is a draft of one of my papers. 4 Q. Okay. So, is it a paper that you wrote? 5 A. Yes, I was the third author on this paper. 6 Q. Okay. And it is dated April 21, 2022; is 7 that right? 8 A. Yes. 9 Q. And you referenced it being a draft. Has 10 this turned into a final form article at any point? 11 A. Yes, it is a -- it's been accepted into -- 12 it is in a journal now. 13 Q. Okay. And which journal? 14 A. And this might be the final version. I 15 just -- I don't actually know. 16 Q. Is there a way you can tell by looking at 17 it whether it is the final version? 18 A. I mean, I am sure if I spent a couple hours 19 looking at it and remembering what happened and in what 20 stage it was and where it was posted and things like 21 that, I could tell. But it is going to be pretty 22 similar to the final version, I'm pretty sure about it, 23 because it wouldn't be publicly available like this if 24 it weren't very close to the final version, is my 25 suspicion.</p>

<p style="text-align: right;">Page 138</p> <p>1 Q. Okay. And do you recall what journal it's 2 been published in? 3 A. Sociological Methods and Research. 4 Q. And do you recall what edition of the 5 journal, you know, timing wise? 6 A. I don't know if that edition is out yet. 7 So, it just may not have a, you know, version, you 8 know, quarterly two, and here's a year, and here's a 9 page number. That may not be available yet. 10 Q. I see. Okay. And seeing as how it is not 11 out yet, I want to get a sense of how different this 12 might be from the final version. You mentioned that 13 the differences may be minimal. Could you explain that 14 a bit more? 15 A. Well, typically, what can happen is, 16 occasionally authors will produce working papers like 17 this that are publicly available on someone's academic 18 website or something. And it is at that point, 19 typically, going through the review process. And it is 20 usually -- if you are going to release something 21 publicly, you typically -- it's -- or someone is, it 22 is, typically, going to be pretty close to the final 23 version. 24 And, so, that's typically what happens. 25 But there might be some final changes. I just can't</p>	<p style="text-align: right;">Page 140</p> <p>1 Whereupon, Counsel was requested to give instruction 2 regarding the witness's review of the transcript 3 pursuant to the Civil Rules. 4 5 SIGNATURE: 6 7 Transcript review was requested pursuant to the 8 applicable Rules of Civil Procedure. 9 10 TRANSCRIPT DELIVERY: 11 Counsel was requested to give instruction regarding 12 delivery date of transcript. 13 Original transcript? 14 Ms. McKnight: Yes, regular delivery with a rough. 15 Certified transcript? 16 Ms. Theodore: Yes, regular delivery. 17 18 19 20 21 22 23 24 25</p>
<p style="text-align: right;">Page 139</p> <p>1 recall for sure. 2 Q. And, so, the date, April 21, 2022, that is 3 the date that it was published publicly, even though in 4 the draft form? 5 A. I don't know. I'm not the person that 6 would have put this on a website so I can't say. 7 MS. McKNIGHT: Okay. If you can just give 8 me five minutes, I think we may be done here, but let 9 me just make sure we are done and then we can conclude 10 then. So, I just need until -- it is 4:44 now. I need 11 to 4:50 and then I don't think it will take much 12 longer. 13 THE WITNESS: Okay. 14 - - - - - 15 (Off the record.) 16 - - - - - 17 MS. McKNIGHT: So, I have no further 18 questions for you today. So, thank you for your time, 19 Dr. Collingwood, and thank you, Ms. Linberg, and 20 Elisabeth. 21 MS. THEODORE: We'll read and sign. 22 (Deposition was concluded at 4:50 p.m.) 23 24 25</p>	<p style="text-align: right;">Page 141</p> <p>1 REPORTER'S CERTIFICATE 2 The State of Ohio,) 3 SS: 4 County of Cuyahoga.) 5 I, KELLIANN D. LINBERG, RPR, a Notary Public 6 in and for the State of Ohio, duly commissioned and 7 qualified, certify that the within named witness, LOREN 8 COLLINGWOOD, Ph.D., was by me duly sworn to testify the 9 whole truth, in the cause aforesaid; that the testimony 10 was taken down by me in stenotypy in the presence of 11 said witness; afterwards transcribed upon a computer; 12 that the foregoing is a true and correct transcript of 13 the testimony given by said witness taken at the time 14 and place in the foregoing caption specified. 15 I further certify that I am not a relative, 16 employee, or attorney of any of the parties hereto, or 17 of any attorney or counsel employed by the parties, or 18 financially interested in the action. 19 IN WITNESS WHEREOF, I have hereunto set my 20 hand and affixed my seal of office at Cleveland, Ohio, 21 on this 4th day of OCTOBER, 2024. 22 23  24 Kelliann D. Linberg, RPR 25 Notary Public within and for the State of Ohio My commission expires: May 25, 2029</p>

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1 Veritext Legal Solutions
2 1100 Superior Ave
3 Suite 1820
4 Cleveland, Ohio 44114
5 Phone: 216-523-1313
6
7 October 7, 2024
8 To: ELISABETH THEODORE, ESQ.
9
10 Case Name: Pierce Et Al v. State Board Of Elections
11 Veritext Reference Number: 6926043
12 Witness: Loren Collingwood , Ph.D. Deposition Date: 9/24/2024
13
14 Dear Sir/Madam:
15
16 Enclosed please find a deposition transcript. Please have the witness
17 review the transcript and note any changes or corrections on the
18 included errata sheet, indicating the page, line number, change, and
19 the reason for the change. Have the witness' signature notarized and
20 forward the completed page(s) back to us at the Production address
21 shown
22 above, or email to production-midwest@veritext.com.
23
24 If the errata is not returned within thirty days of your receipt of
25 this letter, the reading and signing will be deemed waived.
26
27 Sincerely,
28 Production Department
29
30 NO NOTARY REQUIRED IN CA

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1 DEPOSITION REVIEW
2 CERTIFICATION OF WITNESS
3
4 ASSIGNMENT REFERENCE NO: 6926043
5 CASE NAME: Pierce Et Al v. State Board Of Elections
6 DATE OF DEPOSITION: 9/24/2024
7 WITNESS' NAME: Loren Collingwood , Ph.D.
8 In accordance with the Rules of Civil
9 Procedure, I have read the entire transcript of
10 my testimony or it has been read to me.
11 I have made no changes to the testimony
12 as transcribed by the court reporter.
13
14 _____
15 Date Loren Collingwood , Ph.D.
16 Sworn to and subscribed before me, a
17 Notary Public in and for the State and County,
18 the referenced witness did personally appear
19 and acknowledge that:
20
21 They have read the transcript;
22 They signed the foregoing Sworn
23 Statement; and
24 Their execution of this Statement is of
25 their free act and deed.
26
27 I have affixed my name and official seal
28
29 this ____ day of _____, 20____.
30
31 _____
32 Notary Public
33 _____
34 Commission Expiration Date
35

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1 DEPOSITION REVIEW
2 CERTIFICATION OF WITNESS
3
4 ASSIGNMENT REFERENCE NO: 6926043
5 CASE NAME: Pierce Et Al v. State Board Of Elections
6 DATE OF DEPOSITION: 9/24/2024
7 WITNESS' NAME: Loren Collingwood , Ph.D.
8 In accordance with the Rules of Civil
9 Procedure, I have read the entire transcript of
10 my testimony or it has been read to me.
11 I have listed my changes on the attached
12 Errata Sheet, listing page and line numbers as
13 well as the reason(s) for the change(s).
14 I request that these changes be entered
15 as part of the record of my testimony.
16
17 I have executed the Errata Sheet, as well
18 as this Certificate, and request and authorize
19 that both be appended to the transcript of my
20 testimony and be incorporated therein.
21
22 _____
23 Date Loren Collingwood , Ph.D.
24
25 Sworn to and subscribed before me, a
26 Notary Public in and for the State and County,
27 the referenced witness did personally appear
28 and acknowledge that:
29 They have read the transcript;
30 They have listed all of their corrections
31 in the appended Errata Sheet;
32 They signed the foregoing Sworn
33 Statement; and
34 Their execution of this Statement is of
35 their free act and deed.
36 I have affixed my name and official seal
37 this ____ day of _____, 20____.
38
39 _____
40 Notary Public
41
42 _____
43 Commission Expiration Date

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1 ERRATA SHEET
2 VERITEXT LEGAL SOLUTIONS MIDWEST
3 ASSIGNMENT NO: 6926043
4 PAGE/LINE(S) / CHANGE /REASON
5 _____
6 _____
7 _____
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16 _____
17 _____
18 _____
19 _____
20 _____
21 Date Loren Collingwood , Ph.D.
22 SUBSCRIBED AND SWORN TO BEFORE ME THIS _____
23 DAY OF _____, 20____ .
24
25 _____
26 Notary Public
27
28 _____
29 Commission Expiration Date

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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